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KITTITAS

Final Environmental Statement

LAND MANAGEMENT PLAN

WENATCHEE NATIONAL FOREST

USDA FOREST SERVICE

FINAL ENVIRONMENTAL STATEMENT

USDA - FS - R6 - FES (ADM) 78-15

KITTITAS LAND MANAGEMENT PLAN

WENATCHEE NATIONAL FOREST

KITTITAS AND CHELAN COUNTIES, WASHINGTON

Lead Agency: USDA-Forest Service
P.O. Box 811
Wenatchee, WA 98801

Responsible Official: R. E. Worthington, Regional Forester
(for National Forest lands) Pacific Northwest Region

For further information, contact: Robert Benson
Land Management Planner
P.O. Box 811
Wenatchee, WA 98801
(509-662-4372)

Abstract:

This Environmental Statement describes seven alternatives for the management of land and resources in the 193,600 acre Kittitas Planning Unit, Wenatchee National Forest. The "no action" alternative is one of the seven alternatives that are described. The report discusses the estimated effects of implementing each of the alternatives. The Forest Service preferred alternative is Alternative 7. The rationale for this identification is discussed in Section VII.

Comments regarding this statement should be sent to the Forest Supervisor of the Wenatchee National Forest by _____, 1979.

Timing and Right of Appeal:

The approval of a Forest Plan, revision or significant amendment is the only decision subject to administrative review (CFR 219.8). A notice of appeal must be filed within 45 days from the date of the Record of Decision (CFR 211.19).

SUMMARY

KITTITAS LAND MANAGEMENT PLAN

USDA - FS - R6 - FES (ADM) -78-15

TYPE OF ACTION: ADMINISTRATIVE

Responsible Federal Agency: USDA - Forest Service
Wenatchee National Forest
P.O. Box 811
Wenatchee, WA 98801

Responsible Official: R. E. Worthington
Regional Forester
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Portland, OR 97208

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(509-662-4372)

Date of Transmission to EPA and the Public: Draft: July 31, 1978
Final: JUN 27 1979

SUMMARY

I. The proposed action consists of developing and implementing a plan of management for 109,000 acres of National Forest in the Kittitas Planning Unit. The 193,600 acre Kittitas Planning Unit is located in Central Washington and includes 107,000 acres of National Forest land in Kittitas County and 2,000 acres in Chelan County. Principal owners of the 84,600 acres of intermingled lands are Burlington Northern, Inc., 51,600 acres; the Boise Cascade Corporation, 10,000 acres; and the Washington State Department of Game, 6,600 acres. Land management allocations that were developed, apply only to the National Forest lands on the Unit. No major issues were raised by agencies or the public in response to the DES. This statement has been prepared in accordance with interim regulations for the National Forest Management Act of 1976.

II. Alternatives considered in developing the preferred alternative are:

1. Optimize timber production. (Alternative 1)

2. Draft Environmental Statement Preferred Alternative. This alternative balances resource uses through timber, wildlife habitat and dispersed roaded and unroaded recreation management. (Alternative 2)

3. Emphasize enhancement of wildlife habitat. (Alternative 3)

4. A blend with more emphasis on wildlife habitat enhancement and less emphasis on unroaded dispersed recreation than Alternative 2. (Alternative 4)

5. A mix with emphasis on wildlife habitat management and dispersed recreation. Roadless areas identified in RARE II are allocated to further planning. (Alternative 5)

6. Continue present management - no action. (Alternative 6)

7. The F.E.S. preferred alternative, a refinement of Alternative 2. (Alternative 7)

Alternative 7 was identified as the preferred alternative based on an evaluation of public response to the DES and the alternatives presented. It provides a balance of resource uses through timber, wildlife habitat and dispersed roaded and unroaded recreation management and most satisfactorily meets the goals that were established to evaluate alternatives. Under the preferred alternative, 19 percent of the planning unit (National Forest land) will be managed with emphasis on dispersed unroaded recreation opportunities, 20 percent to enhance wildlife habitat, and 61 percent to optimize timber management activities.

In this Alternative, the two inventoried roadless areas, 6038-Lion Rock and 6039-Naneum, are allocated to non-wilderness management. This is in accord with the January 4, 1979, decision for the Roadless Area Review and Evaluation (RARE II) process.

III. The primary environmental effects are those associated with timber management activities such as timber harvesting and road construction. Limited harvesting of the remaining old growth stands will continue.

Measures to protect or enhance the soil, water, visual resources and wildlife habitat have been identified. These will provide for use while maintaining or enhancing land productivity, water quality, the fisheries resource, wildlife habitat and the visual resource. The protective mitigative and enhancement measures may result in increased operating costs and reduced timber yields.

In some alternatives, the allocation of part of the land base with emphasis on unroaded dispersed recreation will reduce potential timber yields while maintaining opportunities for this type of recreation use. All alternatives emphasize dispersed recreation but have provisions for needed developed recreation.

IV. DRAFT ENVIRONMENTAL STATEMENT

The Draft Environmental Statement was filed with EPA on July 31, 1978, and copies mailed to individuals, groups and organizations. Responses to the Draft Statement were received from the following agencies, organizations, individuals and companies.

AGENCIES

A. Federal

U.S. Advisory Council on Historic Preservation
U.S. Department of Agriculture, Soil Conservation Service
U.S. Department of the Army, Corps of Engineers
U.S. Department of Housing and Urban Development
U.S. Department of the Interior, Bureau of Reclamation
U.S. Department of the Interior, Office of the Secretary, Portland
U.S. Department of the Interior, Office of the Secretary, Washington
U.S. Department of Energy, Bonneville Power Administration
U.S. Environmental Protection Agency

B. State

State of Washington
- Department of Game
- Department of Ecology
- Washington State Parks and Recreation Commission

C. Local

Public Utility District No. 1 of Chelan County

ORGANIZATIONS

Alpine Lakes Protection Society
Black Hills Audubon Society
Cle Elum Chamber of Commerce
International Snowmobile Industry Association
Kittitas County Field & Stream Club
Kittitas County Snowmobilers, Inc.
The Mountaineers
Northwest Pine Association
North Central Cascades Miners Association
Pacific Northwest 4-Wheel Drive Association
Seattle Audubon Society
Sierra Club - Cascade Chapter
Wandering Willys Jeep Club
Western Forest Industries Association

INDIVIDUALS

Walter D. Bailey
Alexander and Margaret Deak
John Deonigi
Drs. Robert and Willa Fisher
Marilyn Fife
Harry, Elsie and Ella Hale
Patrick J. Hand
John J. Hanson
S.E. Harris, M.D.
Stanley D. and Kay A. Humann
Archie Mills
Stanley W. Murphy
Charles Raines
Joseph C. Schott
Joan Scott
Edwin W. Smith
Ira L. Spring
Jack White

COMPANIES

Boise Cascade Corporation
Burlington Northern Inc.
Silva Tree Management
Texaco Inc.

TABLE OF CONTENTS

TABLES, CHARTS AND MAPS

Credits

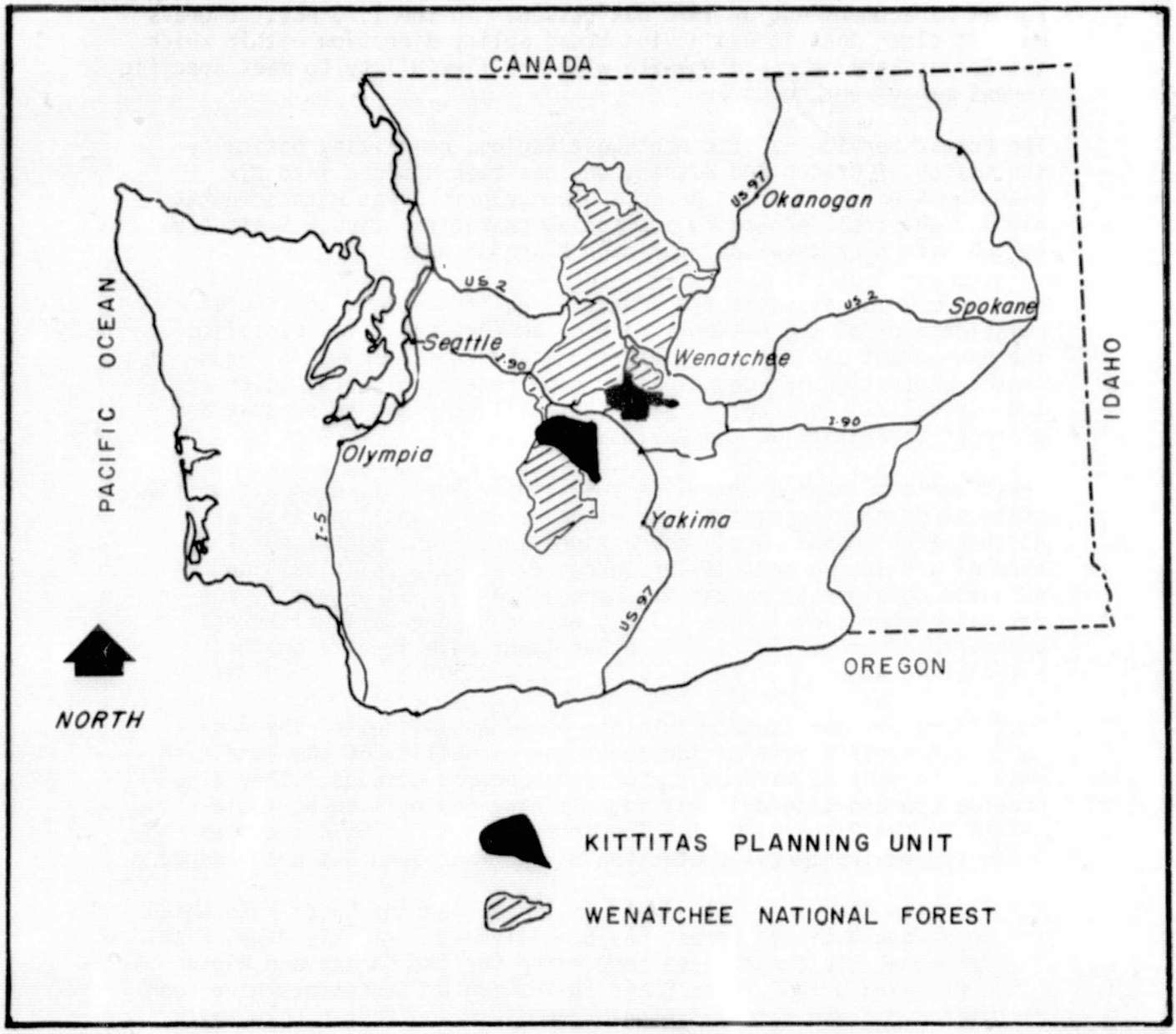
Wildlife illustrations are by Gregory D. McHuron and Ralph Flowers. Other illustrations are by Helen Flynn or were taken from various Forest Service pamphlets such as "Passage West".

The interdisciplinary team for the Kittitas Planning Unit consisted of the following individuals:

Robert Benson	Planning Team Leader	Phillip McColley	Soil Scientist
Monroe Bickford	Silviculturist	Daniel Meschter	Mining Engineer
Michael Cooley	Planner	Tobias Notenboom	Resource Asst.
Calvin Dunnell	Recreation Staff Off.	Granville Rhodus	Watershed Specialist
Oren Erickson	Landscape Architect	Tom Spolar	Resource Asst.
David Hicks	Forester Inventory	Roland Tiedemann	Planner
Henry Maekawa	Landscape Architect	Merle Wischnofske	Wildlife Biologist
John Malone	Logging Systems Specialist		

KITTITAS PLANNING UNIT

LOCATION MAP



I. INTRODUCTION

The Forest Service is charged with the responsibility of management and protection of the National Forests. As a national guide to be followed in the planning process, Congress enacted the Forest and Rangeland Renewable Resources Planning Act in 1974. The Act directs the Secretary of Agriculture to periodically assess the national situation of the forest and rangeland resources, and to submit, at regular intervals, recommendations for long-range Forest Service programs essential to meet future needs for those resources. The program recommendations are to cover all the activities of the Forest Service. As an amendment to the Act of 1974, the National Forest Management Act of 1976 was passed. In the 1976 Act, Congress made it clear that it was giving broad policy direction within which the Forest Service could operate with the flexibility to meet specific forest management needs.

The Forest Service Pacific Northwest Region, comprising basically the states of Oregon and Washington, has been divided into six Planning Areas. Planning Areas are geographic areas with somewhat similar physical, economic, and social characteristics. Draft Area Guides have been developed for each Planning Area.

Each Area Guide assesses the economic, environmental, and social relationships of the National Forests to the Area. It identifies the management and resource situations, and sets minimum environmental protection and coordination requirements. Coordination of the six Pacific Northwest Area Guides will help assign program and planning priorities at the Regional level.

The Kittitas Planning Unit lies in Planning Area II, composed of the State of Washington east of the Cascades and a small portion of northwestern Idaho. Areas are divided into Planning Units. The size of a Planning Unit is influenced by social, political, and economic considerations and its manageability. It generally conforms to natural drainages and may extend beyond National Forest boundaries where activities on other lands have impacts on the National Forests.

Unit Plans are developed within the broad guidelines of the Area Guide and contain information about the capability of the land with respect to meeting various social and economic demands. They also provide coordinating criteria for planning projects to be implemented in the Planning Unit. Requirements set forth in the Area Guide for environmental protection may be increased but not lowered.

The Kittitas Planning Unit is one of three Planning Units into which the Wenatchee National Forest has been divided. At this time, Final Environmental Statements have been filed for the Chelan and Alpine Lakes Planning Units. Also Draft Environmental Statements have been circulated for the Naches-Tieton-White River and Cougar Lake Units which are located in the Gifford Pinchot and Mt. Baker-Snoqualmie

National Forests but partially administered by the Wenatchee National Forest. Management planning, including land adjustment, is in progress for both the Alpine Lakes Wilderness and the surrounding management units and resources within the Alpine Lakes Planning Unit.

The Kittitas Planning Unit includes 193,600 acres of land and lies on the east side of the Cascade Crest in Central Washington between the Cascade Mountain-Manastash Ridge divides and the crest of the Wenatchee Mountains. For ease of planning, the Unit was divided into East and West Kittitas Subunits.

The East Kittitas Subunit is north of Ellensburg and encompasses an area from Virden east to the summit of the Wenatchee Mountains. The West Kittitas Subunit lies south of Interstate 90 and extends west to the Cascade Crest and south to Manastash Ridge. The north-west boundary of the West Subunit is seven miles south of Snoqualmie Pass.

Interstate 90 intersects the north portion of the West Kittitas Subunit in the vicinity of Easton. State Highway 97 lies just west and north of the East Kittitas Subunit. These highways make the Unit easily accessible to about two million residents of the State of Washington in from two to three hours traveling time.

As the human population increased and a greater awareness developed for maintaining or improving environmental quality, conflicts between user groups accelerated. There is an urgent need to develop and implement a more complete, in-depth land management plan than is currently in existence.

The proposed action consists of developing and implementing a plan of management for 109,000 acres of National Forest Land in the Kittitas Planning Unit. The 193,600 acre Kittitas Planning Unit is located in Central Washington and includes 107,000 acres of National Forest Land in Kittitas County and 2,000 acres in Chelan County. Principal owners of the 84,600 acres of intermingled lands are Burlington Northern, Inc., 51,600; the Boise Cascade Corp., 10,000 acres; the Washington State Department of Game, 6,600 acres. Management allocations that were developed apply only to the National Forest lands in the Unit.

This Environmental Statement analyzes seven alternative plans of management. Alternative 7, the preferred alternative, provides a balanced management of the Unit's resources and satisfactorily meets the goals that were established to evaluate alternatives. This plan updates the Multiple Use Plan and provides management direction for the area until the Wenatchee National Forest Management Plan is implemented (P.L. 94-588 National Forest Management Act). This plan includes consideration of the guidelines set forth in the interim directions in Forest Service Manual 8200 issued to implement the National Forest Management Act (P.L. 94-588) and is determined to be consistent with these guidelines.

II. AFFECTED ENVIRONMENT

A. PHYSICAL CHARACTERISTICS

1. Location

The Kittitas Planning Unit is situated on the east slopes of the Cascade Mountain Range of Central Washington. It occupies portions of the Ellensburg, Cle Elum, and Leavenworth Ranger Districts on the Wenatchee National Forest. Of approximately 109,000 acres of National Forest land in the Unit, all but about 2,000 acres are in Kittitas County. This small area on the Leavenworth District is in Chelan County.

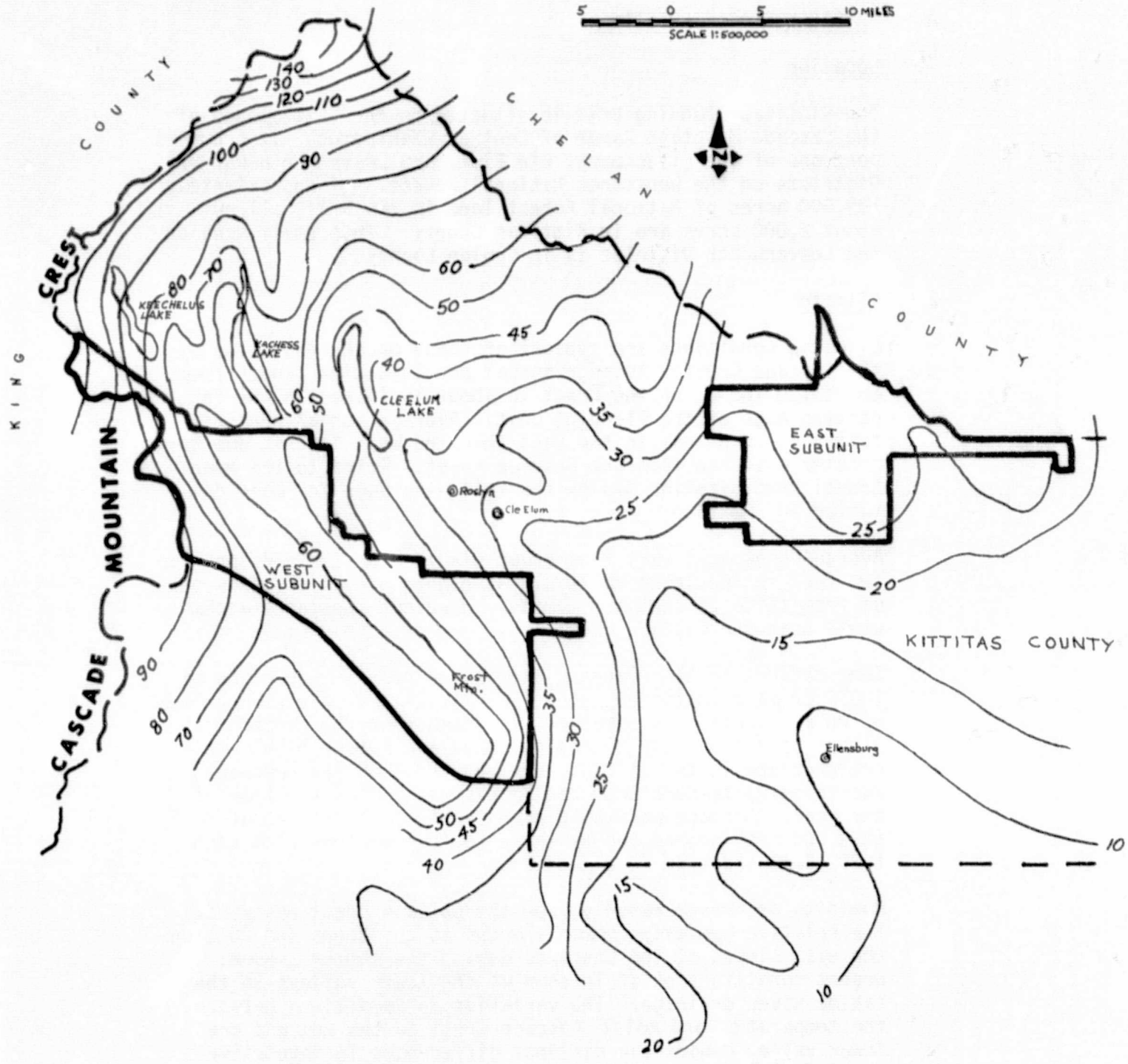
2. Climate

Climatic conditions are typical of those on the east side of the Cascade Crest. Average annual precipitation ranges from about 130 inches on the Crest to about 15 inches on the far eastern edge of the Planning Unit. Average annual precipitation is much less in the East than the West Subunit due to a greater distance from the Cascade Crest. Refer to the Mean Annual Precipitation Map on the following page for more detailed information.

Average snowpacks vary from about six feet on the midslopes to two feet in the lower valleys. At higher elevations snowpacks of from 10 to 20 feet are common. Heaviest snowpacks accumulate near the Cascade Crest.

Temperatures in the Planning Unit range from summer highs of $100^{o}F$ or more in the eastside foothills to average winter lows of $20^{o}F$. Subzero temperatures are common on the eastern slopes of the Cascade Mountains. Average summer high temperatures are in the sixties near the Crest of the Cascades, but freezing temperatures can be experienced at any time of the year. Average maximum winter temperatures are about $30^{o}F$ at 4,000 feet decreasing by three to four degrees with each 1,000 foot increase in elevation.

Humidity decreases rapidly from the Cascade Crest eastward. The relative humidity commonly drops to the teens and 20's on the east slopes of the Cascades during the summer season. Desert conditions exist in some of the lower valleys in the Yakima River drainage. The variation in conditions between the temperate and moist Cascade Crest to the hot and dry lower valley causes the distinct differences in vegetative types, wildlife, and land management activities that occur within the Planning Unit.



LEGEND

—10— Lines of Normal Annual Inches of Precipitation

3. Physiography

The terrain is dominated by steep, rocky, highly dissected mountain and ridge systems. Interspersed are terraces, plateaus, slumps, and rocky headwalls. Local relief over most of the area averages between 3,000 and 5,000 feet. Many peaks are more than 5,000 feet high while several such as Mt. Clifty, Lookout Mountain, Naneum Point, and Lion Rock exceed 6,000 feet in elevation. The lowest elevations are in the 2,000 foot range.

Extensive glaciation and continued volcanic activity occurred in the northern and western portions of Kittitas County in the Pleistocene Epoch (12,000-600,000 years ago). Glaciers flowed down the present Yakima River Valley from the Snoqualmie Pass area and merged near Cle Elum. The combined glacier moved down the valley with the most recent advance halting just west of Thorp in the Elk Heights area.

The Cle Elum, Kittitas, and upper and lower Yakima Valleys have all been partially filled with rocks that were deposited by normal stream activity and as glacial outwash. Most of the valleys in the East Kittitas Subunit were formed by the erosive action of water and exhibit a typical V-shape profile. Almost all of the streams and rivers in the Unit are tributaries of the Yakima River, one of the major tributaries of the Columbia River.

4. Vegetative Zones

Elevations ranging from 2,000 to more than 6,000 feet result in seven vegetational zones as recognized by Franklin and Dyrness definition of a zone. A zone is an area in which a single vegetative species is the major climax dominant. Appendix D depicts these zones schematically and includes a brief description of each zone. These zones may occur as sequential belts on mountain slopes, but more often they interfinger. Each Zone attains its lower elevational limits in valleys and its highest levels on ridges. Disturbances, such as fire and resulting seral, (pioneer) vegetation may obscure zonal sequences.

Zones occurring within the Unit include the shrub steppe, ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii*), lodgepole pine (*Pinus contorta*), grand fir (*Abies grandis*), western hemlock (*Tsuga heterophylla*) and subalpine fir (*Abies lasiocarpa*).

5. Fire

As a result of aggressive fire protection measures, the area within the Unit burned over annually by wildfire now averages about five acres with an average fire size of about 1/4 acre.

The exclusion of fire has resulted in heavy buildup of natural fuels over the past few decades.[1/] While the area being burned over annually by wildfire has been held at a low level, there has been a significant increase in effort required to maintain this level of protection.

In the absence of recurring fires, the successional pattern has favored shade tolerant tree species. The exclusion of fire in the long run will tend to create an uneven aged forest of over stocked stands. A fire history for the two Ranger Districts that encompass most of the Kittitas Planning Unit [2/] is as follows:

	ELLENSBURG DISTRICT			CLE ELUM DISTRICT		
	LIGHTNING	MAN CAUSED	TOTAL	LIGHTNING	MAN CAUSED	TOTAL
1950-1959				86	23	109
1960-1969	69	106	175	56	131	187
1970-1977	60	122	182	33	209	242
GRAND TOTALS	129	228	357	175	363	538

B. SOCIO-ECONOMIC INFLUENCES

1. Population

The State of Washington had a 1960 population of 2,853,000 [3/] people. By 1970, its population had increased to 3,413,000 people, an increase of 19.6% as compared to national increase of 13.3%. Consequently, during this decade, the population in the State of Washington was increasing at a rate roughly 1½ times as great as the national average. The State had an estimated 1978 population of 3,774,300, an increase of 10.6% over the 1970 Bureau of the Census figure.

Most of the state's residents live in metropolitan areas. The metropolitan complex of Seattle-Everett had a 1970 population of 1,424,000--over 40% of the state's total population at that time. The Seattle-Everett complex ranks seventeenth among the nation's metropolitan centers. More than 70% of the population of the state lives west of the Cascade Mountains.

1/ Refer to Appendix A for a discussion on Fuel loading applicable to the Kittitas Unit.

2/ Includes areas outside of the Kittitas Planning Unit.

3/ State of Washington Pocket Data Book, 1978, Office of Program Planning & Fiscal Management.

Washington State will have an estimated population of 3,800,000 in 1980 and 4,800,000 [1/] in 2,000. Although the general birth rate for the state has continued to fall since 1960, migration to the state, and the fact that births within the state outnumber deaths, indicates that the state's population will continue to grow at least to the end of this century.

The same situation is predicted for other states in the northwest region. Oregon is expected to experience population increases at about the same rate as Washington, while Idaho, although experiencing a lower growth rate, will continue to experience a net gain in population. Population growth in all three states is expected to be slightly greater during 1980 to 1990 than in the present decade.

The population density of Washington State is 57 people per square mile as opposed to the national average of 60 people per square mile and 72 people per square mile for the United States excluding Alaska and Hawaii. Within Washington State, density figures range from over 540 people per square mile in the metropolitan areas to less than four per square mile in some of the sparsely populated southeastern counties. Kittitas County had a population density of 11 persons per square mile in 1978.

Population and population growth from 1960 to 1978 for Kittitas County compared to the State of Washington and the U.S. is portrayed below:

	1960	1970	1978	Percent Change 1970-1978
Kittitas	20,467	25,039	25,600	+2.2
Washington State	2,853,000	3,413,000	3,774,300	+10.6
U. S.	179,323,000	203,255,000	217,599,000	+7.1

The populations of towns and cities in Kittitas County in 1970 and 1978 were:

	1970	1978 [2/]
Cle Elum	1,725	1,725
Ellensburg	13,568	12,800
Kittitas	637	720
Roslyn	1,031	1,000
South Cle Elum	374	380

1/ State Planning Series No. 5, Enrollment Forecasts, State of Washington, 1965 to 1985.

2/ State of Washington Pocket Data Book, 1978, Office of Program Planning & Fiscal Management.

The population composition of Kittitas County compared to the State as a whole was as follows in 1978. 1/

	White	Spanish Surname	Black	American Indian	Asian	Other	Total
Kittitas	24,620 (96.2%)	400 (1.5%)	100 (.4%)	190 (.8%)	210 (.8%)	80 (.3 %)	(100%)
Washington State	3,468,000 (91.9%)	90,500 (2.4%)	86,800 (2.3%)	51,800 (1.4%)	64,200 (1.7%)	11,300 (.3%)	(100%)

2. Employment and Income

In 1974, the United States had a per capita income of $4,602.00 compared to $4,955.00 for Washington State and $4,034.00 for Kittitas County. Median family income is lower in Kittitas County than in many other parts of the State. Median family income in the county was $9,981 in 1974. The State average was $12,677 that same year. Low income has resulted in many young people leaving the area for better employment opportunities. In 1974, 27% of the 8,800 households in Kittitas County earned less than $5,000 and 10% earned less than $10,000.

In 1977, employment covered by the Employment Security Act in Kittitas County was as follows: 1/

Industry	Av. Persons	% Total	Av. Wage ($)
Agriculture, Forestry, Fishing	73	1.2	5,400
Mining	-	-	
Construction	273	4.4	16,500
Manufacturing	870	14.0	14,300
Trans. & Public Util.	286	4.6	12,800
Wholesale Trade	300	4.8	9,000
Retail Trade	1,655	26.7	6,100
Finance, Ins. & Real Estate	192	3.1	8,000
Services	989	15.9	14,100
Gov't.(Local, State, Fed'l.)	1,569	25.3	14,100
TOTAL	6,207	100.0	

This represents approximately 25% of the County population. Much of the minority employment (Spanish Surname) is oriented toward agriculture, is seasonal and is not covered by the Employment Security Act. There has been a continuous decline

1/ State of Washington Pocket Data Book, 1978, Office of Program Planning & Fiscal Management.

over the last two decades in labor requirements in the manufacture of lumber. Logging employment stabilized in the 1960's. Recent trends in the forest products industry indicate a strong demand for plywood and other forest products as a result of national housing starts that reached a seasonally adjusted rate of 1.9 million annually in May 1977, up 34 percent from a year earlier. The latest Marple's Business Newsletter reports new jobs are being created "across the board" in lumber and plywood production.

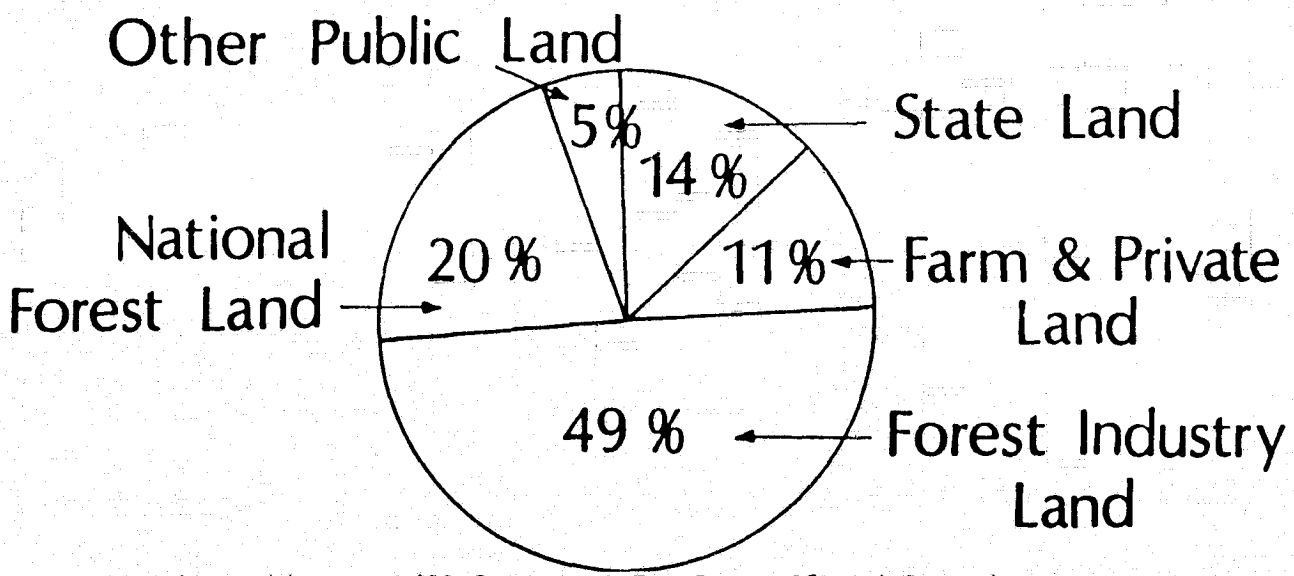
Unemployment continues to be a serious problem in Washington State. In September, 1975, the national unemployment figure was 8.3% while Washington State had a figure of 9.8%. However, recent economic predictions are for state employment to increase by 685,000 or 48.5 percent by 1995, while the unemployment rate is predicted to be down to 5.5 percent. During September, 1977, the unemployment rate for Kittitas County was 7.4% compared to 5.8% for the State. Ellensburg, located in Kittitas County is listed as an area of persistent unemployment.

3. Local Communities

As the following graph shows, National Forest land in the State of Washington provides 20% of the lumber used in the State.

Where The Lumber Used in Washington
Comes From: 1972

Origin of Lumber Used in Washington 1/



1/ Washington Mill Survey, 1972, Bergvall and Ormrod

Logs originating on National Forest land are used for a wide variety of products. The principal users of National Forest logs include veneer and plywood mills - 46%, lumber mills - 28%, pulp mills - 10%, shake, shingle, pole, post and piling mills - 16%, and log exports - 5%. There were 445 wood products mills in the State of Washington in 1972. Of this number, 356 were more than two-thirds dependent on a single ownership class for their logs. Of these 356 mills, 162 were dependent upon forest industry owned logs (36%), 81 were dependent upon farmer and miscellaneous privately owned logs (18%), 39 were dependent on logs owned by the State of Washington and other public agencies (9%), and 74 were dependent upon National Forest logs (17%).

In 1975, 120.2 million board feet of timber were harvested from 26,771 acres of timber land in Kittitas County.

Presently, the Alpine Veneer plant in Roslyn is the only operating mill in the vicinity of the Kittitas Planning Unit. It utilizes about 24 MMBF of timber annually. A chip plant near Cle Elum operates whenever the pulp market is satisfactory. Based on records from the Cle Elum and Ellensburg Ranger Districts about one third of the timber harvested on the Planning Unit has been transported to the Puget Sound area for processing over the last 5 years.

The rest of the timber from the Planning Unit goes to mills at locations such as Roslyn, Yakima, and Peshastin. Much of the coarse residues developed at these sawmills are shipped to pulp and paper operations elsewhere.

4. Land Status

Of the 193,600 acres of land within the Planning Unit boundaries, 109,000 acres, or 56 percent, are National Forest lands. In the East Kittitas Subunit, 48,600 of the 66,200 acres, or 74 percent, is in National Forest ownership. Approximately 15,000 acres of National Forest land within the core of this Subunit were acquired through land exchanges. Much of the 17,600 acres of private land in this Subunit is located along the periphery of the area. Major private land owners are the Washington State Game Department, Washington Department of Natural Resources, and the Boise Cascade Corporation.

In sharp contrast, only 60,400 of the 127,400 acres, or 47 percent of the land in the West Kittitas Subunit is National Forest. National Forest sections alternate with private land sections in a checkerboard pattern in most of this area. This land pattern dates back to 1864 when the Northern Pacific Railroad revised their charter and also received a grant of free land from the U. S. Government to help subsidize railroad construction. Forty sections, or 25,600 acres of public domain land, were granted to the Northern Pacific Railroad for every mile of railroad right-of-way constructed through a Territory such as Washington and Idaho. These alternate odd numbered sections extended 40 miles on each side of the proposed railroad track. The final withdrawal area was based on an 1872 map. This route was farther north than the original route planned in 1870 and included the Kittitas Valley and Stampede Pass.

Also, in 1870, Congress had passed legislation that gave railroads the right to select lands within ten miles of each side of the right-of-way in lieu of some of the lands originally granted. This was necessary because some of the sections originally granted to the railroads had been preempted by or sold to settlers since they had not been withdrawn from settlement in time. In lieu of these, the railroad was permitted to select others known as "lieu lands."

In 1893 and 1907, Forest Reserves were established from the remaining public domain lands in this area. It was not until 1918 that the railroad grants were settled. Burlington Northern, Inc. is now the principal owner of the checkerboard private lands in the Kittitas Unit. Sizeable acreages are also owned by Boise Cascade Corporation and the Washington Department of Natural Resources. About 5,000 acres in the Taneum River Valley were acquired by the Forest service through land exchanges.

Land ownership adjustments with the major land owners in the Kittitas Unit are possible. Adjustments could eliminate the extra administrative and operation costs required to perpetuate the checkerboard ownership pattern of landownership. Adjustments could also result in a continuity of management in key recreational, watershed, or wildlife habitat areas.

Land ownership adjustments for the Kittitas Planning Unit will depend upon the proposed management strategies of the selected alternative and any proposals received from the major private land owners and land management agencies within the Unit. All firm land adjustment proposals will be analyzed through the NEPA process. All requirements of NEPA, including public involvement, will be met prior to any land adjustments.

At the present time, there are two major proposals that may affect the Kittitas Planning Unit. A preliminary agreement with the Burlington Northern Inc. has identified some target areas for desirable land adjustments, including areas outside of the Planning Unit. The proposal overlaps three Planning Units. The target areas are as follows:

1. Consolidate Wenatchee National Forest lands lying generally north of the outlets of Keechelus, Kachess, and Cle Elum Lakes and within the Alpines Lakes Planning Unit in Kittitas County by acquiring Burlington Northern Inc. lands.

2. Consolidate Wenatchee National Forest lands in the Manastash and lower Taneum areas by acquiring Burlington Northern Inc. lands. This area lies generally east of Mole Mountain and is in the Kittitas Planning Unit.

3. Retract from National Forest lands in the area east of the Cascade Mountain Crest lying south of the outlet of Keechelus Lake, north of an east-west line from Mole Mountain to Naches Pass and south and west of I-90. This area lies primarily in the West Subunit of the Kittitas Planning Unit. The western portion is within the Naches-Tieton-White River Planning Unit.

A land adjustment agreement between the Washington State Department of Natural Resources and the Wenatchee National Forest affects agency lands in Kittitas and Chelan Counties. In the East Kittitas Subunit, the proposal includes retraction from peripheral and isolated National Forest tracts lying east of Wilson Creek. The Forest Service would acquire Washington State Department of Natural Resource lands within the core of the Subunit, west of Wilson Creek.

The present distribution of land ownership in the Unit is as follows:

DESCRIPTION	East Kittitas(Ac.)	West Kittitas(Ac.)	Total Acres
National Forest	48,600	60,400	109,000
WA Dept. of Nat'l Resources	4,100	3,700	7,800
WA State Game Dept.	5,000	1,600	6,600
Burlington Northern Inc.	-	51,600	51,600
Boise Cascade Corp.	7,000	3,100	10,100
Other Private	1,500	7,000	8,500
TOTALS	66,200	127,400	193,600

5. Historical Background

The Unit lies in an area that was occupied by bands of Yakima and Wenatchee Indians and is within the area ceded to the U. S. Government by the Yakima Indian Treaty dated June 9, 1855. These Indians were skilled horsemen, wintering in village camps along the rivers and traveling widely in summer to gather berries and hunt and fish in the forested Cascade Mountains. Article 3 of the Yakima Indian Treaty states as follows: ".....as also the right of taking fish at all usual and accustomed places, in common with the citizens of the territory, and of erecting temporary buildings for curing them; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land.....".

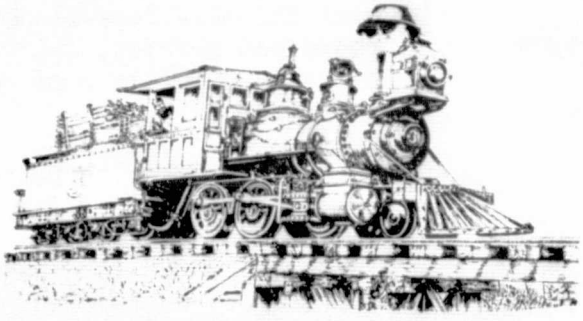
First visitors with European origins were the Hudson Bay Company trappers and traders along the Columbia between 1810 and 1835. The Yakima tribe led a confederacy of fourteen eastern Washington tribes in a war against settlers in Washington Territory during 1855-1858 because the settlers began to enter the Yakima's territory in violation of the 1855 treaty. Several battles and skirmishes occurred during this time. In 1856, the U.S. Army established a strong fort and garrison at Fort Simcoe. That same year, General

Gabriel J. Rains and 700 troopers invaded the Yakima Valley and dispersed Chief Kamiakin and his warriors. The War Department closed eastern Washington to settlement during this turbulent time. At the battle of Four Lakes, the alliance of Spokane, Palouse, Couer d' Alene and Yakimas were finally defeated by Colonel Wright's forces on September 17, 1858.

On March 8, 1859, the Senate consented to ratification of the treaty that had been concluded at Fort Walla Walla on June 9, 1855, between Territorial Governor Isaac Stevens, the Yakimas and other interior Indians. On April 18, 1859, President James Buchanan accepted, ratified and confirmed the treaty by signing it, formally ending the war. Under the terms of this treaty, the Yakima Confederacy settled on the 1,216,000 acre Yakima Reservation. This opened other lands of the Yakima Valley to settlement.

Kittitas County settlers began irrigating their land in 1871. In 1879, there were 17 miles of canals, and about 6,000 acres were being irrigated by water diverted from Manastash and Taneum Creeks. In 1881, a group of farmers in Ellensburg formed the Ellensburg Water Company.

Late in 1886, the eastern section of the Northern Pacific Railroad reached Ellensburg. In 1887, it was extended across Stampede Pass in the Cascade Mountains and linked to Puget Sound. The Northern Pacific Railroad and other companies undertook large investments in irrigation in order to attract settlers to suitable railroad land grant holdings in the valley.



One of the largest coal fields in the State was developed at Roslyn and Cle Elum by the Northern Pacific Railroad and its subsidiary, the Northwestern Improvement Company, in 1886. With the introduction of diesel locomotive engines, work at the mines dwindled and eventually ceased.

6. Historical, Archeological and Cultural

The most recent listing of the National Register of Historic Places has been consulted in compliance with Section 106 of the National Historic Preservation Act of 1966. No sites on that listing occur within the Kittitas Planning Unit. The Wenatchee National Forest has also completed an extensive inventory of potential historical sites on the Planning Unit and has met with the Yakima Indian Nation Tribal Council in an attempt to identify any sacred sites, cemeteries or sites containing sacred objects on the Unit.

The Washington State Advisory Council on Historical Preservation has been consulted regarding the presence of any historic properties within the Planning Unit. A copy of the State's letter is included in Appendix B. The Virden Arrastra, an ore crusher, is currently listed on the State's Register. In addition, there are remnants of the original Stampede Pass railroad grade and associated sites that may have historical significance.

C. NATURAL RESOURCES AND PRESENT NATIONAL FOREST MANAGEMENT SITUATION

1. Air Quality

Most land or resource management activities currently conducted within the Planning Unit have no perceptible effect on air quality. One exception is the prescribed burning of forest residues, mostly logging slash. This can temporarily adversely affect air quality beyond the boundaries of the Unit. The Federal Clean Air Act, 1/ state laws and regional-state coordination agreements are applicable to all planned Forest Service burning. Projects which cannot provide adequate fuel treatment to meet protection management and environmental objectives are not undertaken.

The common prevailing winds over the Unit are westerly, with occasional periods of easterly winds. East wind conditions occur frequently in October and November and can cause the drift of smoke from prescribed burning into the metropolitan area of Puget Sound. Usually, however, periods of east wind are associated with burning conditions too severe for prescribed burning to be accomplished successfully. These east wind conditions typically last two or three days at a time.

The primary airshed associated with the Planning Unit drains into the Kittitas Valley. Normal prevailing winds in this part of the Unit flow across the crest of the Cascades from the west and down valley. Prescribed burning is normally restricted during periods of northwesterly winds which would result in the drift of smoke into the Kittitas Valley and Ellensburg.

1/ Public Law 90-148, November 21, 1967

Smoke from wildfires that normally occur in August, September, and October pose the same problems to both east and west sides of the Planning Unit. Fast initial action to restrict the size of wildfires helps to reduce potential air pollution.

2. Soils

Soils in the Unit can be grouped into two very broad groups for simple comparison. One group, residual, was formed in place from weathered bedrock materials. The other group, transported, was formed from soil material moved by ice, water, or wind.

The residual soils generally occur in a higher position on the landscape than do the transported soils. Residual soils extend from the mid-elevations up to and including the Subalpine Zone. They vary greatly in texture, depth, and in many other ways both physically and chemically because of the wide variety of parent materials from which they were derived.

Parent material variety is reflected in rock types that include: granite, granodiorite, gneiss, schist, sandstone conglomerate, basalt, andesite, rhyolite, pyroclastics and serpentine. The geologic pattern of occurrence is highly variable and the boundaries between rock types may be either abrupt or diffuse, depending on the area. Productivity of these soils is highly variable, usually ranging between site class III and V.

The transported soils include those soils formed from raw material weathered or broken down in one place and transported by means of ice, water or wind to its present location whereupon a new soil formed. In general, these are the most important commercial forest producing soils in Kittitas County. They usually occur at a lower position on the landscape than the residual soils, and also often have greater soil depth and better soil moisture conditions. Timber site class ranges from II to IV on these kinds of soils.

Because of the amount of volcanic activity in the Cascade Mountains, most soils in this area have been influenced by volcanic ash in the surface horizons. On some soils the ash has been lost by surface erosion, but on others it may be thick enough to be recognizable. The ash layer usually is not thick enough to map, or to affect the use and management of these soils; however, its presence serves to remind us that all of these soils are geologically very young. It also is an indicator of the rate of erosion on different areas.

Detailed information on the soils in the Unit is available from the "Wenatchee National Forest Soil Resource Inventory", dated 1976, by Phillip McColley.

3. Water

Annual Flow Cycle - The flow regime of streams in the Planning Unit is characterized by four periods. In late October or early November the long dry summer comes to an end and fall rains occur. The first few storms may not effect runoff significantly since most of the precipitation is absorbed to replenish soil moisture. Once the soil moisture deficit is satisfied, streams relect each new storm with proportional increases in flow. Snow may be falling at higher elevations.

This pattern continues until late November or early December when air temperatures fall below freezing at lower elevations and the snowpack encompasses much of the watershed. Late fall or early winter are dangerous flood periods. A combination of already high stream flows, heavy and extensive snowpacks and warming weather accompanied by a high intensity and prolonged rainstorm at this time of year can be disastrous.

During the second period, the flood danger diminishes as temperatures drop and the thickness and density of the snowpack increases while its rate of melt decreases. Minimum annual stream flows may occur at this time of year if subfreezing temperatures persist.

The greatest total volume of runoff occurs during the spring snowmelt period. Depending upon the characteristics of the snowpack and time and rate of melt, floods can occur. Spring snowmelt can last four months because of elevation differences in the watershed. High intensity warm rainstorms, at a time of high stream flows, compound the flood danger.

The last period in the flow regime follows spring runoff. Stream flows gradually decrease as the snowpack recedes and evaporation and transpiration rates increase. With the continuation of hot, dry weather in September and October intermittent streams may dry up and low summer flows occur in perennial streams.

The Unit annually discharges about 271,200 acre-feet of surface water. This would meet the yearly domestic water needs of 407,000 average size families (four people per family) if it were evenly regulated.

Ground water seepage helps to maintain base flows of perennial streams. Ground water capabilities are, for the most part, undeveloped. Wells on the Subunit are generally expected to yield 1-20 gallons of water per minute. 1/ In both Subunits, springs and water catch basins have been developed to improve

1/ From a map entitled "General Availability of Ground Water" - Yakima Kittitas Resource Conservation and Development Project, Washington, 1974.

cattle distribution on the range. Ground water receives consideration prior to the implementation of any site specific project.

Flow Control The unequal distribution of runoff throughout the year has led to the construction of water storage dams in the Yakima River Basin. Keechelus, Kachess, and Cle Elum, in the Upper Yakima River Basin, are primarily irrigation projects that store part of the spring runoff for agricultural use during the growing season. These reservoirs also provide a measure of flood control. Most of the runoff from the Kittitas Planning Unit flows directly into the Yakima River.

Runoff from the Meadow Creek drainage flows into Keechelus Lake while the runoff from Cabin Creek flows into Lake Easton. The Roza Dam located about midway between Ellensburg and Yakima, on the Yakima River, impounds some of the runoff from the Planning Unit. There are three sites on the Planning Unit that are topographically suitable for water storage. They are:

Site Name	Stream Name	Tributary to	Site Location Sec., T(N),R(E)	Potential W.S. Elev.	Storage Potential Ac.-Ft.	Approx. Acreage of Federal Land Affected
Osborn Point	Taneum Cr.	Yakima R.	25 19 15	3,000	55,960	527
Shadow Creek	Taneum Cr.	Yakima R.	28 19 15	2,600	34,980	95
Buck Meadows	South Fork	Yakima R.	26 18 15	4,400	106,780	638

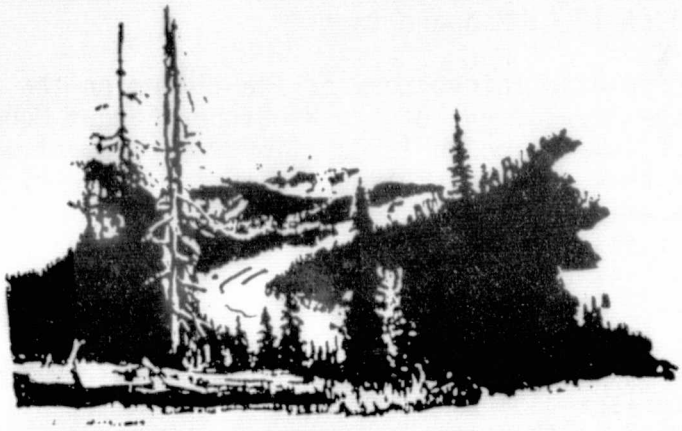
Water Quality The water quality of all streams within the Planning Unit are AA,[1/] the highest classification under the State Water Quality Standards. Lakes within the Planning Unit have been designated as Lake Class.[1/] Uses to be protected in this class include water supply, wildlife habitat, stock watering, fish reproduction, and general recreation. A detailed description of the existing water quality of the Yakima River is available in a publication entitled "The Yakima Basin Level B Study" dated May, 1977.

Within the Planning Unit the main points of concern are increases in suspended sediment and turbidity attributable to management activities such as timber harvesting and road construction. Major sediment loads move during the first high stream flows in the fall, during major flood flows and during spring runoff. Erosion and slides generated by exposed soil and cuts can significantly increase sediment loads in smaller streams where fish spawning beds may be damaged.

1/ Appendix, Section E.

Dissolved chemical properties are generally insignificant within the Planning Unit. Loss of riparian vegetation and water quality degradation by livestock during low flow seasons is another concern. An extensive non-point water quality monitoring program is conducted throughout the Unit to inform managers of pollution sources on National Forest lands.

Floodplains and Wetlands - Small areas of wetlands are dispersed throughout the Planning Unit. A portion of the Yakima River floodplain is on the Planning Unit but not on National Forest land. A small segment of the Cabin Creek floodplain is on National Forest land. The objective of Executive Order 11988, Flood Plain Management, May 24, 1977, is to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.



4. Timber

Moisture and topography greatly influence the character of the forests in the Unit. A large portion of the commercial timber land and much of the volume occupies a 30 mile wide band along the eastern crest of the Cascades. Progressing eastward, the character of the forest changes dramatically as physiological conditions for tree growth become ever more marginal.

Generally, the area occupied by the major timber species in the Planning Unit is as follows: Douglas-fir, 36 percent; ponderosa pine, 27 percent; true firs, 10 percent; lodgepole pine, 7 percent; and western hemlock, western larch, white pine, western red cedar, Englemann spruce and other related species, 20 percent. A noticeable feature of these stands is their heterogeneous nature relative to species, age, and size class.

The State of Washington accounts for 10 percent of the total United States production of lumber and wood products. Although the total State volume of timber harvested has increased over the last ten years (5.5 billion board feet in 1962 and 6.2 billion board feet in 1975), the harvest from National Forest land has remained relatively constant. The harvest is determined by the potential yield as computed and described in the respective Forest timber management plans.

The present estimated potential biological annual timber yield for the Planning Unit is 13.2 million board feet based on the existing Wenatchee Timber Management Plan. Present data indicates an average potential yield of 161 board feet per acre per year. This is based on harvest and regeneration management. The Kittitas Unit timber outputs for Alternatives 1 through 5 and 7 are based on biological potential and full stocking level control. The current Timber Management plan includes some constraints for critical soils, watershed considerations and landscape management units. However, the Plan does not fully reflect current timber harvest constraints attributable to soil, watershed, visual, and economic considerations. Consideration of these constraints results in an estimated net annual yield of 12.0 MM board feet.

A recently completed reinventory of the timber on the Forest will be used in the development of the Wenatchee Forest Management Plan scheduled for completion in 1982. Timber management will be incorporated into this interdisciplinary planning process. In the interim, the existing Wenatchee National Forest Timber Management and final Kittitas Land Management Plans will provide direction for timber activities on the Unit.

Silvicultural treatments have varied greatly over the years with clearcutting most common in higher volume stands where defective material comprises a significant portion of the stand. Selective cutting is used in the ponderosa pine - Douglas-fir zone. Increasing volumes are harvested by skyline methods or helicopters. These logging methods reduce soil disturbance.

Most of the National Forest timber harvested on the Unit is processed in mills in the local area. In addition to the programed harvest, there are certain convertible (able to be converted into board foot measure) and miscellaneous products that many individuals harvest from the Unit. Examples include fuelwood, poles, posts, and house logs. Miscellaneous forest products include Christmas trees, transplant trees and shrubs, boughs and seed cones. Requests for most of these products have shown a marked increase over previous years; e.g., the demand for firewood has increased about fourfold in a relatively short time.

5. Range

Much of the Planning Unit is suitable for livestock use. Cattle and sheep allotments are located where suitable range exists and where such use is economically feasible. The existence of natural barriers and ease of control are important factors in determining cattle range areas on the Unit. Some areas which have suitable forage but where fencing makes use by cattle difficult or uneconomic are allocated to sheep grazing. The transitory and rough range in Swauk is an example. In the West Subunit, Burlington Northern Inc. manages their intermingled range lands harmoniously with the grazing that occurs on National Forest land.

Significant portions of the range area are transitory range. Native grasses and sedges respond well to light changes resulting from timber stand removal. Full establishment occurs within four years unless the site was severely burned. Soils disturbed by logging and seeded with domestic grasses, such as orchard grass, timothy, hard fescue, smooth brome and intermediate wheatgrass, will remain dominant over the native species for five-ten years after establishment. Vigor of domestic grasses drops during this period and native grasses begin to dominate. Typical production for various management options are:

	LBS/ACRE AIR-DRY FORAGE	
	Maximum	Average
Production of seeded clearcut	2,500	500 (20 yrs)
Production of non-seeded clearcut	1,000	500 (20 yrs)
Production in Partial Cut Areas		200 (10 yrs)

About 12,000 acres of National Forest land in the Planning Unit are included in four commercial allotments. These produce the following animal unit months (AUMS) of grazing from National Forest land:

CATTLE ALLOTMENT	EAST KITTITAS SUBUNIT A.U.M.	WEST KITTITAS SUBUNIT A.U.M.
Manastash		621
Virden	24	
lable Mountain	638	___
TOTALS (Cattle)	662	621
SHEEP		
Swauk	(966) 193 A.U.M.'s 1/	0

1/ AUM Conversion factors: Mature Cow = 1.00, Mature Sheep = .20.

In addition, the Taneum and Pacific Crest Recreation Stock Allotments occupy most of the West Kittitas Subunit. The Naneum and a small portion of the Tronson Recreation Allotments are on the East Kittitas Subunit. Range conditions are generally rated as fair to good on both of the two subunits for cattle, sheep, and horses. This is based upon utilization checks of key forage areas.

6. Wildlife and Fish

Wildlife

About 70 species of mammals inhabit the Planning Unit. (Refer to Appendix F). Big game species include elk, mule deer, bighorn sheep, black bear, and cougar. Fur bearers are found in small populations throughout the Unit. They include beaver, otter, weasel, mink, bobcat, marten, lynx, and badger. Some fur trapping occurs but its intensity varies.

An estimated 160 species of birds inhabit the Unit. Songbirds, woodpeckers, waterfowl, and game birds are found in various locations and at different times. Blue, ruffed, and spruce grouse are among the larger game birds seen. The hermit thrush, a favorite songbird, inhabits the mixed conifer types. Transient bald eagles are occasionally seen along the river bottoms and off the Planning Unit.

At present, there is habitat for species requiring old growth and solitude habitat and snag dependent species. There are approximately 12,000 acres of old growth timber on National Forest land in the Unit. Of the National Forest lands

about 11,200 acres (18%) of the West Subunit is in old growth, while 730 acres (1.5%) of the East Subunit is classed as old growth.

The estimated 1975 mule deer population for the Naneum, Taneum and Manastash Deer Management Units was 2,900. [1/] The average 1974 and 1975 hunting season deer harvest for these Units was about 500 of which 70 percent were bucks.

Elk are the most important species on the Planning Unit in terms of population and hunter attraction. Herds of Rocky Mountain elk occupy both Subunits.

1/ All deer and elk population and harvest statistics for the 1970's are from the Washington State Game Department Publication entitled, "Big Game Status Report 1975-1976".

During the early 1800's the Kittitas area was on the peripheral range of the Roosevelt elk. This species disappeared when the early settlers moved into the area. In January, 1913, 50 Rocky Mountain elk were transported from the Yellowstone area of Montana and released along the Naches River in Yakima County by the Yakima Game Commission. In January, 1915 another 45 elk were released near Vantage by the Kittitas Game Commission and formed the nucleus for the present Colockum herd. These elk herds increased rapidly in size and in 1927 the first bull elk season was set.

The following discussion deals with the elk herds that inhabit areas on and in proximity to the Planning Unit. Actual elk numbers occurring on National Forest lands within the Planning Unit are only a fraction of these estimated herd sizes. The difference is caused by the large acreages of elk habitat occurring on private lands within and adjacent to the Unit. The Washington State Game Department controls the expansion of the elk herds by permitting hunters to harvest surplus animals.

The Colockum herd in the east Subunit has increased to about 4,000 animals with an average harvest of about 900-1000 animals. This herd ranges from the Columbia River on the east to Swauk and Tronson Creeks on the west. Winter range for this herd is east of the Unit, off the National Forest, in Quilomene, Brushy, and Whiskey Dick Canyons and other small canyons along the Columbia Breaks. The winter range for the Colockum herd is adequate at this time and supplemental feeding is unnecessary.

The Taneum-Manastash herd is estimated at about 1600 animals with an average harvest of 400 elk from 1971-1975 (55% antlerless). Some of the elk that spend their summer months along Manastash Ridge migrate south to winter in the Wenas and lower Naches areas. The Washington State Game Department maintains two permanent feeding stations for the Taneum-Manastash herd in Joe Watt and Robinson Canyons.

Fish

The few high lakes that are on the Planning Unit were barren until planted by man. Shallow lakes are subject to freezeouts but others are regularly stocked by the Washington State Game Department. Stocking is normally done aerially and usually consists of cutthroat trout.

Some of the streams contain native populations of trout, but the Yakima River is sustained by a put and take fishery. The most popular hatchery raised sport fish is the rainbow trout. About 90 percent of the trout planted in Washington State are rainbow trout. The status of existing principal fish streams and lakes on the Unit is listed on Page F-2, Appendix F.

The Yakima River supports anadromous runs of coho and chinook salmon and steelhead trout. At one time the Yakima run exceeded 600,000 fish. By 1920, the spawning population of salmon and steelhead trout was down to 11,000 fish.

Anadromous species of fish presently utilizing the Yakima System include spring and fall chinook salmon, coho (silver) salmon, and steelhead trout. It is estimated (National Marine Fisheries Service, 1975) that 3,000 spring chinook, 1,000 fall chinook and 6,000 steelhead trout presently spawn in the Yakima basin streams.1/

The upper Yakima basin, including the waters in the Planning Unit, contains some favorable spawning areas for anadromous fish. Unsuitable conditions for fish passage in the downstream reaches of the Yakima River limits the use of the spawning areas.

1/ Draft Environmental Statement, Bumping Lake Enlargement, Bureau of Reclamation.

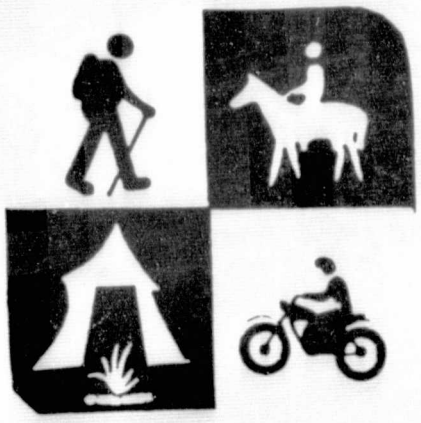
Spring chinook and steelhead trout have suffered least from the low flows resulting from irrigation diversions, because of the more favorable timing of their spawning migrations. Coho or silver salmon runs, on the other hand, declined the most because of the unfavorable timing of their upstream migration in the fall when the flow in the Yakima River is least. A few coho still spawn in the upper Yakima River, but the run is a small fraction of what it used to be.

7. Threatened and Endangered Species

There are no known threatened or endangered[1/] wildlife or plant species that occur on the Unit. A list of wildlife and plant species that may possibly occur on the Unit are included on Page F-16, Appendix F. Threatened and endangered species that are discovered through studies or reports are entered in the TRI[2/] data base. On-going studies include extensive inventories of threatened and endangered wildlife and plant species. The Wenatchee National Forest and Nature Conservancy are cooperating on an inventory of threatened and endangered plant species.

8. Recreation

Relationship to State and County Outdoor Recreation



Kittitas County receives heavy recreational use from persons outside of the County. Its proximity to, and accessibility from heavily populated areas, such as King County, and its recreational attractions and favorable climate are factors in this popularity. The Kittitas Planning Unit is almost entirely located in Regional Recreational Zone 19, encompassing all of Kittitas County. The Regional Recreation Data Program for the Northwest projects future recreation activity participation into three anticipated growth rate categories. These are: Stable and slow growth (30 percent increase by year 2000) and rapid growth (70 percent increase by year 2000). Sixteen recreational activities were apportioned between these categories in the following manner:[3/]

1/ Glossary - Threatened and Endangered Wildlife Species.
2/ Glossary - Total Resource Information.
3/ Regional Recreation Data Program for the NW, June 1975, Pacific NW River Basins Commission.

Stable	Slow Growth	Rapid Growth
Hunting	Picnicking	Swimming
Fishing	Sightseeing & Driving for Pleasure	Boating
	Walking - Hiking	Water Skiing
	Horseback Riding	Playing Outdoor Games
	Camping	Golfing
	Attending Outdoor sporting/cultural events	Bicycling
	Other Activities	Participating in Snow Activities

The 1976 data indicates that Kittitas County generally ranks fourth in Washington State for trips from other zones for recreational activities. It also receives the most trips for hunting, horseback riding and participating in snow activities. The following list ranks Kittitas County against the other 39 Washington State Counties in relationship to activities and trips from other zones in 1976. The table emphasizes the fact that Kittitas County is one of the leading Counties for outdoor recreational activities in the State.

	ACTIVITY	TRIPS FROM OTHER ZONES TO KITTITAS COUNTY	STATE RANKING (BY ACTIVITY)
1.	Camping	344,400	8
2.	Picnicking	274,200	3
3.	Swimming	1,033,700	3
1/ 4.	Sightseeing & Driving for Pleasure	1,243,600	3
5.	Fishing	352,600	4
6.	Boating	308,900	3
7.	Water Skiing	166,700	3
8.	Walking and Hiking	928,100	6
9.	Hunting	98,500	1
10.	Playing Outdoor Games	477,300	5
11.	Bicycling	645,800	4
12.	Golfing	87,700	6
13.	Horseback Riding	178,600	1
14.	Attending Sporting or Cultural Events	111,700	10
15.	Participating in Snow Activities	412,300	1
16.	Participating in Other Activities	20,700	39

1/ Includes ORV use.

Kittitas Unit - Recreation

The Unit is heavily used for most types of dispersed recreational activity. Camping, fishing, viewing scenery, rock hounding, off road vehicle use, and mushroom picking are some popular activities during the warmer seasons. Hunting, berry picking, wood cutting, and driving or hiking to view fall foliage occurs in the autumn. Winter conditions are often excellent for skiing, snowshoeing or snowmobiling. Viewing and photography of big game and other wildlife including birds occurs in all seasons.

Developed recreation is expected to remain constant in the near future. There are two developed recreation sites on the Unit. The largest site is Taneum Campground with a capacity of 150 persons at one time.

The Forest maintains an inventory of potential development sites and has the option of developing suitable sites if the project can be justified. Generally, the policy will be to emphasize dispersed recreation and look toward other agencies or the private sector to develop and manage campgrounds, picnic sites, etc.

The Planning Unit is especially popular with elk hunters. This use is expected to stabilize or increase slowly. Significant increases in hiking and off road vehicle use including snowmobiling are anticipated. The recently completed Wenatchee Off-Road Vehicle Plan gives management direction on recreational motorized use. Much of the Unit is suitable for ORV use and receives heavy use from motorbikes, 4-wheel drive vehicles and other ORV's during the summer and fall. In winter, snowmobiling is the most popular outdoor activitiy on the Unit.

National Forest lands within the Unit provided more than 229,900 visitor-days of recreational use in 1976, as shown by the activities listed below. Many people also use suitable areas of intermingled private land and use recreational facilities on adjacent private, State or other Federal lands.

RECREATIONAL ACTIVITY	VISITOR-DAYS [1/]	POPULAR AREAS
Dispersed Recreation		
Snowmobiling	8,815	Table Mountain
Cross Country Skiing	645	Tronson Ridge
Motor Bikes	15,050	Taneum-Manastash, Stampede
4-Wheel Drive	10,750	Swauk, Taneum-Manastash
Hiking	6,880	Tronson
Equestrian	1,505	Table Mountain
Hunting	27,735	Table Mountain, Manastash
Rock Hounding	2,150	Swauk
Fishing	3,655	Taneum-Manastash
GENERAL [2/]		
a) Gathering Forest Products for Pleasure	15,480	Stampede Pass, Blowout Mountain
b) Primitive Picnicking & Camping	65,145	Table Mountain, Taneum-Manastash
c) Driving for Pleasure	57,190	Table Mountain, Quartz Mountain
SUBTOTAL	215,000	
Developed Recreation		
Camping & Picnicking	14,900	Taneum & Lion Rock Campgrounds
TOTALS	229,900	

An area at Swauk Pass is designated for ski touring and snowshoeing. About 2,000 acres of this 7,700 acre area is on the East Kittitas Subunit.

9. Roads and Trails

An extensive road system taps both Subunits. There are about 260 miles of roads in the Unit with 80% of the total mileage in the

1/ From the 1977 Wenatchee National Forest Recreation Information Management Data forms.

2/ These activities may involve the use of 4-wheel drive or other ORV vehicles but the listed activity is the primary purpose for the visit.

West Subunit. Many of the roads in the West Subunit were constructed under cooperative road construction agreements. Accelerated road construction in recent years is attributable to timber harvesting. Most roads are single lane roads with turnouts. Main access routes used by forest visitors are as follows:

EAST SUBUNIT		WEST SUBUNIT	
Road No.	Road Name	Road No.	Road Name
* 2008	Table Mountain	* 1902	Taneum, North Fork
* 2100	Liberty-Beehive	1903	Cle Elum Ridge
2148	West Fork-Naneum Creek	* 1904	Tamarack Springs
2102	Williams Creek	* 1905	Gnat Flat
* 2107	Swauk Meadows	2004	Log Creek
		204	Cabin Creek
		2115	Meadow Creek
		* 1935	Manastash Drive
		* 1807	Cow Camp
		2009	Little Creek
		* 1902	South Fork Taneum

* - Routes where visual resource concerns are highest.

There are 220 miles of trails in the Unit. All the trails are open to non-motorized use. In addition, 188 miles of these trails are open to ORV (Off-Road Vehicle) use. There are no formal easements for existing trails that cross private land, other than the Pacific Crest Trail. About half the trail mileage in the West Subunit is on private land.

The existing trails will be retained on the trail system although some of them are very low standard. About 60 percent of the trails on the Unit do not meet present day standards and need relocation or reconstruction. Trail oriented off-road vehicle use is a significant recreational activity on the Kittitas Unit.

During 1977, 5.6 miles of trail were constructed or reconstructed by the Forest Service with State funds made available through Kittitas County to enhance ORV trail use. These segments including the Taneum Trail No. 1377B, North Fork Taneum Trail No. 1337 and the Cle Elum Ridge Trail No. 1382, provide loop trip opportunities for users. The existing trail system mileage is as follows:

	EAST SUBUNIT	WEST SUBUNIT	TOTALS
Miles of trails	60	160	220
Miles of trails open to ORV Use	55	133	188

Off-Road Vehicle Plan

The Wenatchee National Forest ORV Plan was completed in 1977 and updated in 1978. The Kittitas Land Management Plan defines the principles under which ORV use is managed. Specific direction including routes, areas or trails closed to ORV use is found in the Wenatchee ORV Plan.

The ORV Plan is periodically reviewed and revised to reflect land management direction in current land management plans, changes in on-the-ground conditions, and public desires. The National Forest Management Act requires on-going planning including periodic reviews of existing plans.

Pacific Crest National Scenic Trail

The Pacific Crest National Scenic Trail traverses 20 miles of the West Subunit. The National Trails System Act of 1968 (P.L. 90-543) provides the means for instituting a national system of recreation and scenic trails. The Appalachian and Pacific Crest Trails became the initial components of the system. The National Parks and Recreation Act of 1978 (P.L. 95-625), recently signed by President Carter, amended P.L. 90-543 and adds historic trails to the National Trails System. Highlights of the Amendment as it relates to the Pacific Crest National Scenic Trail are as follows:

- Advisory Councils: The Secretary responsible for a National Scenic or Historic Trail shall establish an Advisory Council for each trail for a period of 10 years. Membership is not to exceed 35.

- Comprehensive Plan: The Act requires the administering Agency to complete a comprehensive Plan within 2 fiscal years (not later than September 30, 1981) for each National Scenic and Historic Trail established to date. This plan shall be submitted to congress.

- Condemnation: The use of condemnation up to an average of 25 acres per mile for trail purposes is allowed for all National Trails including the Pacific Crest National Scenic Trail. Condemnation without the consent of the owner to acquire private lands or interests therein may only be utilized when all reasonable efforts to acquire such interests by negotiation have failed, and in such cases the Secretary of Agriculture shall acquire title as in his judgment, is reasonably necessary to provide passage across such lands.

"The Pacific Crest Trail, Guide for Location, Designs and Management," 1971, was published by the Forest Service and contains instructions for planning, locating, designing and managing the Pacific Crest National Scenic Trail and adjacent lands. Interim Directive No. 2, 12/21/78 to Forest Service 2350, provides additional guidance for managing the trail. Excerpts from the Guide and all of Interim Directive 2 are included in Appendix I.

The Pacific Crest National Scenic Trail traverses about 20 miles of the Kittitas Planning Unit between Blowout Mountain and Yakima Pass. This segment of Trail contains intermingled private lands with less than half of the trail mileage on National Forest ownership. Portions of the trail segment on private lands have been heavily logged or are likely to be logged in the future.

The Forest Service has acquired an easement covering use of the Crest Trail where it crosses these private lands. The easement grants the Forest Service the right to construct, reconstruct, operate, use and manage the Crest Trail witnin the easement area. The easement area is defined as being 5 feet in width on each side of the centerline of the trail with such additional widths as required for protection of cuts and fills. Under the easement, the Grantor (Burlington Northern Inc.) reserves the right to grow and harvest timber crops on the easement area and the right to cross and recross the easement at any point and for any purpose in such manner as will not materially interfere with use of the trail.

The Pacific Crest Trail Guide recommends acquisition where the trail right-of-way crosses private lands within the boundaries of areas administered by the Forest Service. In conflict with any intent to consolidate Forest Service holdings along the Crest Trail right-of-way through purchase, donation and exchange are Burlington Northern Inc.'s long range plans to consolidate their own holdings in the same area. Relocation of the trail to stay on existing National Forest lands is not feasible since the intermingled private lands extend for several miles on either side of the present trail location. This segment of the Pacific Crest National Scenic Trail is managed as an Experience Level IV Trail Segment, I.D. 2 Appendix I.

10. Visual

Visual resources on the Planning Unit were mapped using the Forest Service Visual Management System. In this system, all National Forest areas are classified according to visual sensitivity (relationship of a particular landscape to travel routes and recreation use areas) and the quality of the scenic resource. Appendix C gives a more detailed explanation of the Visual Management System.

The landscape of the Planning Unit is fairly typical of that found in the Northeastern Cascades character type in Washington State. The greatest contrast in the landscape occurs in the Table Mountain scarp area on the East Subunit. Approximately 1,600 acres in this area are in the distinctive scenic quality class.

Other portions of the Unit have much less overall diversity. However, outstanding scenic qualities occur in landscapes of subalpine vegetation where there are lakes, creeks, open ridgetops and meadows. Other such areas include landscapes where large old growth stands occur on ridgetops; where vegetation surrounds dry or wet meadows such as Gnat and Gooseberry Flats and Buck Meadows; and interesting geologic rock formations occur such as the sandstone formations in the Swauk and rock outcrops on Table Mountain. Based on areas such as these, 14 percent of the Unit is classed as highly scenic.

Much of the Unit is currently classed as highly sensitive because of the landscapes that can be viewed from Interstate 90, State Highway 97, Table Mountain Road, the Pacific Crest National Scenic Trail and developed recreation sites. Many other landscapes traversed by recreationally important forest roads such as Taneum, Manastash Drive, etc., are classed as moderately sensitive.

Based on scenic quality and sensitivity, the existing mapped visual quality objectives for the Planning Unit are as follows:

		(Acres)		
SUBUNIT	RETENTION	PARTIAL RETENTION	MODIFICATION & MAXIMUM MODIFICATION	TOTAL
EAST	9,000	32,100	7,500	48,600
WEST	4,500	29,400	26,500	60,400
TOTAL	13,500	61,500	34,000	109,000

Because of the intermingled ownership pattern in the area traversed by the Pacific Crest National Scenic Trail, the variation in the intensity of management activities between the ownerships, it is difficult to maintain a continuity of visual experiences. Rather than a natural setting, this segment of the trail is characterized predominantly by its displays of timber production activities.

In the existing Visual Resource Management Plan inventory, foreground areas (Appendix C) adjacent to the trail are classified as Retention Zones and middle ground areas as Partial Retention

Zones. Because of the contrasting management between public and private lands along the trail, three alternatives to visual management in this area were considered:

1. Acquire the private lands and upgrade the visual standards to a level commensurate with adjoining existing National Forest lands. For reasons already mentioned in the previous section, this alternative does not appear feasible at this time.

2. Maintain the current visual standards on existing National Forest lands. This is a feasible alternative. However, it fails to recognize the effect that intermingled lands with a different visual standard have on the overall visual experience. Travel along this segment of the trail is characterized by sharp and frequent contrasts in the visual experience.

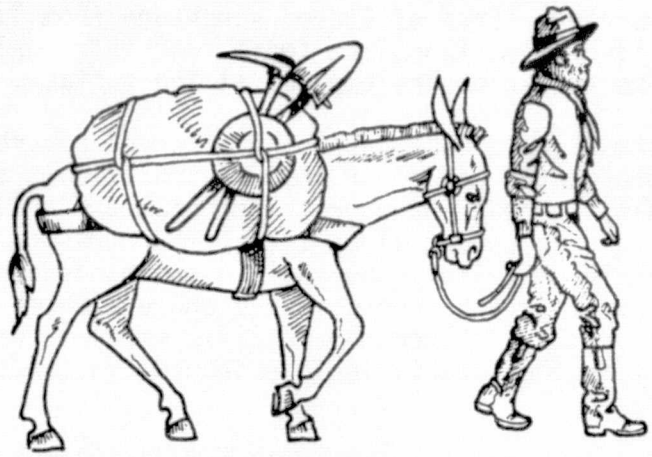
3. Change the visual standard along the Crest Trail on National Forest land to the achievable standard of Modification and manage this Trail Segment as an Experience Level IV Segment (FSM 2350 I.D.2), Appendix I. This would permit a more uniform visual experience along the trail segment by eliminating the sharp contrasts created by differing management practices on intermingled lands. Management activities would be allowed to dominate the original characteristic landscape but should borrow from the naturally established form, line, color or texture in such a manner that their visual characteristics are those of the natural occurrences in the surrounding area.

There would undoubtedly still be differences in the management application on private and public lands. However, the level of contrast would be sharply reduced from what now occurs. The trail, of course, would be maintained for public use and recreation, but the pattern of use evident along this segment of the trail would be oriented toward timber production rather than an undisturbed setting. Alternative 3, above, is in line with management direction found in the publication "The Pacific Crest Trail, Guide for Location, Design and Management," and Interim Directive 2, Forest Service Manual 2350, Appendix I. Management Alternatives 1 through 5 and 7, incorporate this approach.

11. Minerals

The Kittitas Planning Unit is located in the Cascade Mountains geologic provinces and is underlain by metamorphic, sedimentary and volcanic rocks ranging in age from the Paleozoic to Tertiary. Wide spread basalts in the Columbia Basin Province overlap the older folded rocks along the southeast edge of the Planning Unit area.

The Planning Unit area and vicinity has a record of past production of metallic minerals of much less than $1,000,000, almost entirely in gold from the East Subunit near Liberty. The quantity and value of past production of coal is not known. There is no significant commercial production of any minerals at the present time.



The period of greatest activity in the gold lode mines was between 1892 and 1895 with some revival during the 1930's. Most of the placer production was between about 1875 and 1900 and again between 1939 and 1942. It is probable that more than two-thirds of the production value came from placers along Williams and Swauk Creek outside of the Planning Unit boundary.

The lode deposits are relatively simple gold-quartz or gold-quartz-calcite veins with some pyrite in the sandstones of the Swauk formation. The gold tends to occur in rich pods or "pockets", and is highly erratic in distribution. The small size, simplicity of extraction, and richness of the pockets make these deposits more attractive to small-scale mining by individuals than to large-scale mining by major producers.

Placer gold derived from erosion of the veins is found in nearly every drainage in the area. The Liberty District is noted for wire gold and nuggets that are especially attractive to recreational miners. While placer gold is widely distributed, the size of the resource is considered too limited to warrant commercial exploitation.

Non-metallic minerals of minor economic importance in the East Kittitas Subunit include agate crystals and geodes. These are found both in place and in placer deposits in the nearby drainages in the Liberty area. This material is of interest chiefly to rock hounds and collectors.

Gold occurrences in the West Kittitas Subunit are not easily verified. Two minor occurrences of gold are reported in placers in the Manastash Subunit.

The most important non-metallic mineral resouce is coal; chiefly in the Manastash area. The Taneum field contains high volatile "A" bituminous coal in two 14 to 28 inch thick beds. Past production from the Wilson Mine is estimated at several tens of thousands of tons between 1905 and 1925. Estimated coal reserves in this field are about 1.1 million tons. The upper Taneum field is in a narrow outcrop of Eocene sandstone from 1/4 to 1/2 mile wide and five miles long. At least four thin coal seams near the base of the formation are exposed at the surface.

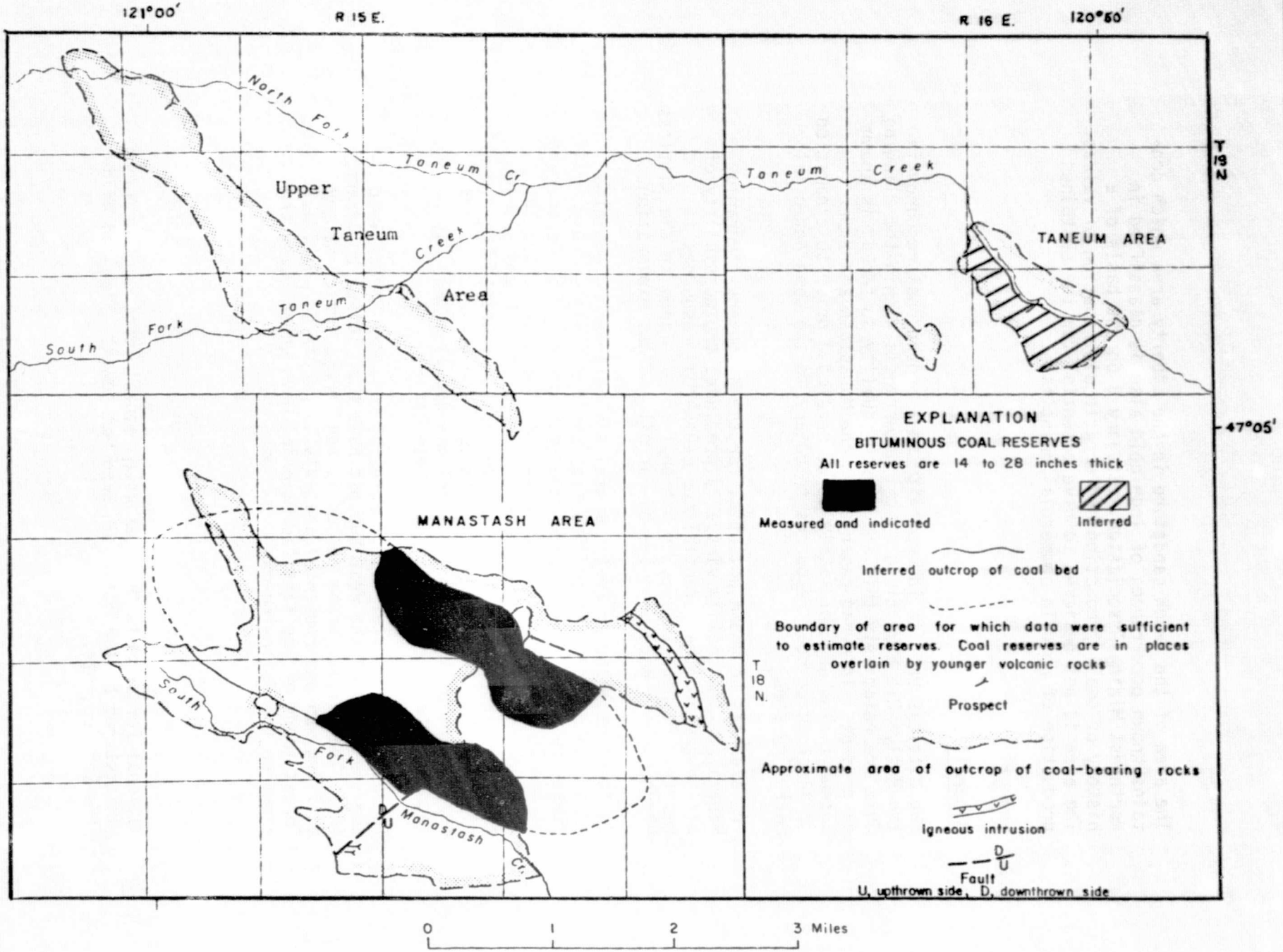
The Manastash field encompasses about seven square miles. It had a small production record in 1890, but difficult access to the steeply dipping beds and poor transportation facilities have discouraged development since then. There may be two beds of high volatile "A" bituminous coal in the Manastash field, in beds 23 to 27 inches thick respectively, and estimated reserves of 39.4 million tons. Other non-metallic minerals of minor economic importance in the Subunit include decorative sandstone, silica, and graphite.

The potential of the iron, nickel, and chromium "ledge" in the West Kittitas Subunit will depend upon the development of a large enough resource, either alone or in conjunction with similar better known deposits along the Cle Elum River to the north.

Except for the coal resources in the Manastash area and the lode gold deposits in the Liberty area, there is little substantive evidence of potential for the future development and production of minerals in commercial quantities from the Kittitas Planning Unit. In general, the potential for the future development of placer gold is so minor in view of economic and environmental limitations that the identification of placer gold as a mineral resource is not warranted at this time.

Based upon a system of classification developed in association with the Northwest Mining Association, the coal fields in the Manastash area are classified in Category 3, 1/ on the basis of probability that development will take place sometime in the future or more than 20 years hence. The individual seams are relatively thin compared to those being mined nationwide and are structurally complex.

1/ Favorable geologic environment, some mineral occurences, but no known deposits. May include some clearly subeconomic deposits which are not likely to be producers within several decades.



MAP OF THE TANEUM AND MANASTASH AREAS

Adapted from Beikman, H. M., et. al., 1961. Coal Reserves of Washington. Washington Division of Mines and Geology Bulletin 47.

The area of the Swauk sandstone in the Liberty area which contains known occurrences of lode gold also is classified in Northwest Mining Association, category 3 on the basis of a history of small production and erratic distribution of values. The area is not believed to have potential for the sustained production of gold in commercial quantities.

12. Energy

Minerals

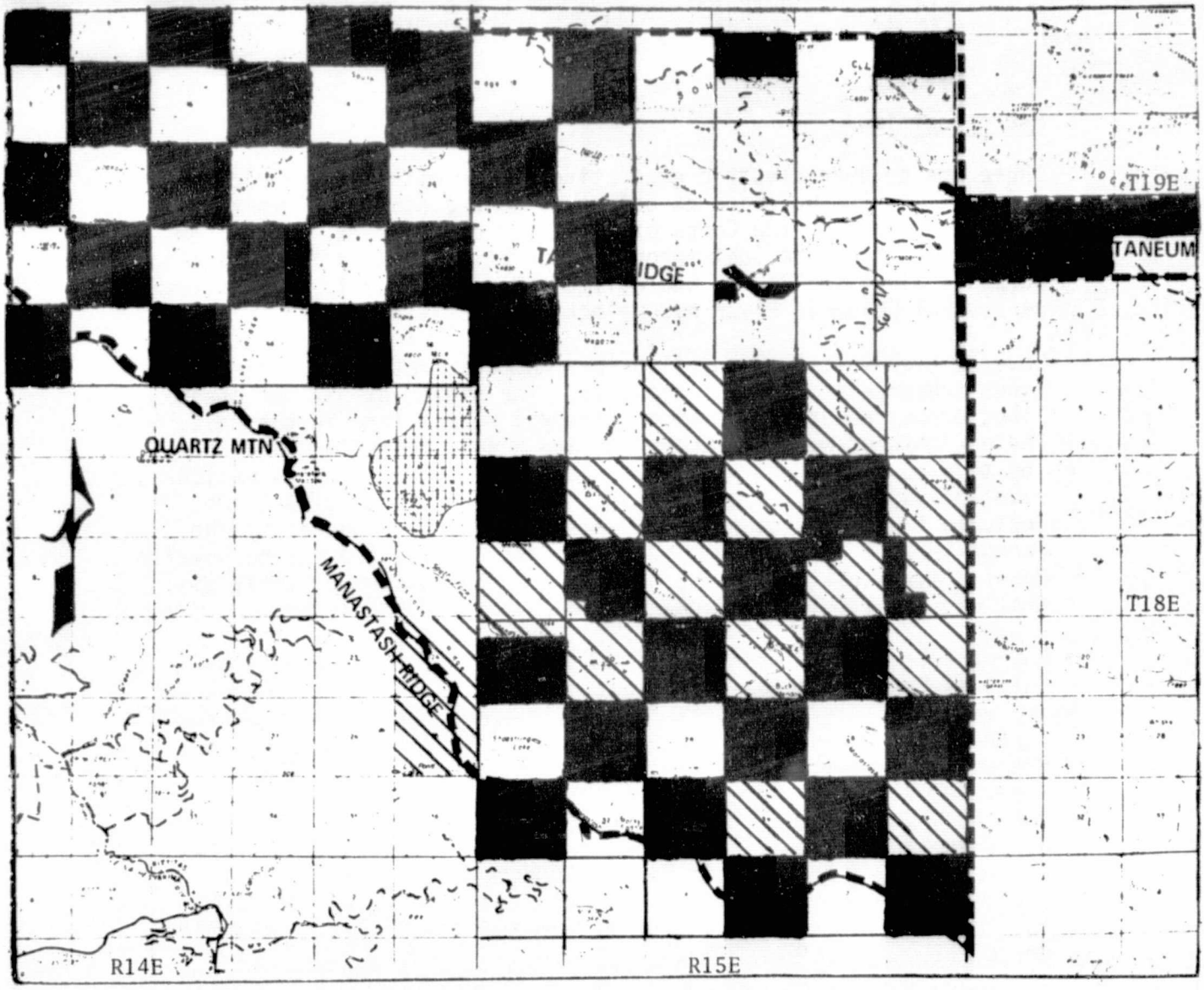
The Kittitas Unit is in proximity to a proven coal resource in the Roslyn-Cle Elum field. Coal occurrences within the Planning Unit are relatively thin and of poor quality so far as is known at present. Inferred reserves in the Manastash and Upper Taneum fields are not likely to be developed prior to exhaustion of alternative coal resources tributary to the same potential marketing area.

The area has no known potential for the discovery of uranium minerals. The geology virtually precludes the possibility of oil or gas and the potential for geothermal resources is remote. Despite this, some National Forest lands in the Kittitas Planning Unit have been leased for oil and gas exploration.

In April of 1976, an Environmental Analysis Record entitled "Proposed Federal Oil and Gas Leasing in Washington" was completed by the Bureau of Land Management of the U.S. Department of the Interior. The report describes the impact upon the environment of leasing national resource land 1/ and private and state lands on which the United States retained the mineral rights within the State of Washington, for exploration and development of the oil or natural gas deposits that may be located beneath or adjacent to these lands.

To date, approximately 9,800 acres of National Forest land in the south end of the West Subunit have been leased by Texaco, Inc. The initial lease period is ten years. Prior to any drilling, an environmental analysis is required. National Forest lands on the Kittitas Planning Unit under lease are shown on the following map.

1/ National Forest and other leasable federal lands such as lands administered by the Bureau of Land Management, Fish and Wildlife Service, etc.



Map Of The Manastash Ridge Oil and Gas Leases

Scale 1/2 inch = 1 mile

LEGEND

------ Planning Unit Boundary

Private or State Land

National Forest Land

Oil and Gas Leases on N.F. Land

Hydroelectric

There are no hydroelectric generating plants within or in close proximity to the Unit and no potential pumped storage sites have been identified by the Corps of Engineers on the Unit. Water from the Unit that is not lost through evaporation or used for irrigation purposes along the Yakima and Columbia River is utilized downstream at several Columbia River hydroelectric generating plants.

Several high voltage Bonneville Power Administration transmission lines traverse portions of the Unit. The rights-of-way for these lines occupy about 100 acres of National Forest land in the Unit. These rights-of-ways are about two and a half miles long and from 150 to almost 200 feet wide. All Bonneville Power Administration right-of-way strips across National Forest land in the Unit are included in Transmission Line Right-of-Way Plans prepared by the Forest Service and approved by the Forest Service and the Bonneville Power Administration. These plans prescribe management activities that can compatibly occur on the land within the corridor.

All of these transmission lines and clearings have an effect on National Forest resources. Effects on watershed, soils, recreation, and visual quality are most critical in steep terrain such as the Stampede Pass crossing. The Stampede Pass corridor includes two BPA single-circuit 500-KV lines, one BPA double-circuit 500-KV line, one BPA double-circuit 230-KV line, one single-circuit Puget Sound Power and Light 230-KV line, and the Burlington Northern Inc. Railroad.1/ Of the several lines that cross in the Stampede Pass area only the Coulee-Raver and the Rocky Reach - Maple Valley lines cross National Forest land. These lines are located in Section 34, Township 22 North, Range 11 East, Willamette Meridian.

In a publication entitled "Environmental Statement Fiscal Year 1974 Proposed Program U. S. Department of Interior Bonneville Power Administration" it states that east-west power transmission capabilities of 20,000,000 KW for the next 20 years are necessary to meet the needs of increasing residential, commercial and industrial demands of the Puget Sound area.

1/ Draft "Pacific Northwest Long Range East-West Energy Corridor Study, Phase I" Bonneville Power Administration, December, 1977.

During the period from 1974-1976, a double circuit 500,000 volt transmission line from Grand Coulee to Raver was constructed across the Unit. This line replaced a lower voltage 230,000 volt line. This project, in conjunction with others in the region, will meet the transmission requirements to the Puget Sound area for about 20 years. Based on Bonneville Power Administration data it is anticipated that insofar as load growth allows, any new transmission lines that are constructed on the Planning Unit within 20 years will occur within the limits of existing transmission line right-of-ways.

Any other projects requiring utility corridors, such as natural gas and petroleum product pipelines or other electrical power transmission, will be analyzed to determine whether or not the proposed utility can be combined with an existing corridor. The most effective corridor location methods are those that are planned cooperatively and consider resource compatibility and engineering and economic constraints systematically. Cooperative computer assisted resource analysis approaches offer the most promise in locating needed future corridors.

Three potential routes for the Northern Tier pipeline cross the Kittitas Planning Unit via Snoqualmie Pass, Stampede Pass and Manastash Ridge. The routes that have the greatest impact on the resources of the Kittitas Planning Unit are the Stampede Pass and Manastash Ridge crossings. All potential routes are being analyzed through the NEPA process. The Bureau of Land Management, U.S.D.I., is the lead agency in this analysis.

Other Sources

High yield, short rotation forestry involves intensively managed wood fiber plantations, in which the crop is produced to supply both wood and energy needs. The portion of the tree most suitable for wood fiber would be channeled to that use and the rest of the crop would be used for energy. In future years, this may prove to be the most appropriate use of the fuel plantation concept.1/

This concept has the greatest potential for forests located in proximity to metropolitan areas. In the near future the excess or waste wood fiber produced on the Kittitas Unit will be locally utilized for heating purposes thus conserving hydro-electric energy and fossil fuels. Technological advances in the development of small, efficient wood fired electrical generation plants may someday create a demand for this type of wood fiber material on the Kittitas Unit.

1/ Northwest Energy Policy Project Study Module III - B, BPA.

13. Wilderness and Other Classification Proposals

None of the area within or immediately adjacent to the Kittitas Planning Unit is currently classified under the Wilderness Act of September 3, 1964.

RARE I

In 1972, the Forest Service undertook the Roadless Area Review and evaluation (RARE I), an extensive review and inventory of National Forest roadless and undeveloped areas. RARE I identified some 1,448 areas, containing 56 million acres, as being roadless and undeveloped, over 5,000 acres in size, and deserving of further consideration for possible wilderness allocation. On October 15, 1973, the Chief of the Forest Service filed a Final Environmental Statement, selecting 274 of these Roadless Areas for further wilderness study. These "Selected" areas represented the Roadless Areas which were to be given priority for further study to determine which should be recommended for addition to the Wilderness Preservation System.

Although RARE I was intended to "settle" the roadless area question, time has shown that this was not to be. Funds were never adequate to carefully study all of the areas. In addition, administrative appeals and lawsuits have delayed implementation of many of the land management decisions that involved uses other than wilderness. Land management planning sometimes conflicted with legislation designed to resolve the allocation of specific areas. Because of the enormous demands on the National Forest Systems, failure to move ahead with reasonable speed in the allocation of lands inside the Roadless Areas can no longer be accepted.

RARE II

In 1977 the Department of Agriculture announced a new program called RARE II. This was a comprehensive process designed to identify roadless and undeveloped land in the National Forest system and to determine which individual areas should be allocated to wilderness, which should be allocated to non-wilderness uses, and which should receive further planning before a final allocation is made. The RARE II process identified 2,919 roadless areas encompassing 62 million acres in National Forests and National Grasslands in 38 States and Puerto Rico. Two of the roadless areas encompassing approximately 19,700 acres were inventoried in the Table Mountain area in the East Subunit of the Kittitas Planning Unit. A general description of the two roadless areas is as follows:

Lion Rock - RARE II No. 6038

This 11,000 acre area is located on Table Mountain in T. 20 N., R. 18 E., W.M. There are approximately 1,000 acres of private land and 10,000 acres of National Forest land in this area.

Lion Rock is oblong-shaped, averaging three miles in width and seven miles in length. Elevations vary from a low of 3,200 feet to 6,359 feet at Lion Rock. Steep slopes averaging more than 30 percent and cliffs are common on the north end, while gentle slopes and benches predominate in the southeast section.

Table Mountain Road No. 2008 lies on the east of this undeveloped area. There are about ten miles of trails within the area west and south of Lion Rock in the First Creek and Snowshoe Ridge areas. In addition, there are eight miles of four-wheel drive roads.

Extensive dispersed use occurs within the area, including rock hounding, off-road vehicle use, cross-country skiing, and snowmobiling. There are no lakes or large streams in the area.

The landscape is classed as moderately or highly sensitive. About 1,600 acres are in a "distinctive variety" class. The remaining 8,400 acres of National Forest land are classed as "common variety". The Stuart Range is visible in the background from much of the area.

The potential timber productivity of this area is as follows:

TIMBER CLASS	NATIONAL ACRES	POTENTIAL (MBF)
High	-0-	-0-
Moderate	1,310	327.5
Low	3,810	419.1
Nonproductive	4,880	-0-
TOTAL	10,000	746.6

Naneum - RARE II No. 6039

This area contains about 8,700 acres and is located south of Mt. Lillian and Mission Peak in T. 20 N., R. 19 E.; T. 21 N., R. 18 E.; and T. 21 N., R. 19 E., W.M. There are approximately 1,200 acres of private land and 7,500 acres of National Forest land inside this area.

Naneum is long and narrow in shape, stretching along its long axis for about nine miles in a southeasterly direction. It averages about 1½ miles in width.

Liberty-Beehive Road No. 2100 lies just north of the area. Elevations vary from about 4,800 to 6,875 feet at Mission Peak. Benches and flat topography are common in the northwest portion near Naneum and Haney Meadows. Steep, rugged slopes and ravines are typical features in the southeast.

A high volume of dispersed and recreational use, including horseback riding, elk hunting, hiking, and motorbike riding, occurs in Naneum. There are excellent opportunities for viewing wildlife species. There are no attractions such as lakes or large streams.

Visually, the landscape is classed as being moderately or highly sensitive and of common variety. The Stuart Range is visible from higher elevations.

The potential timber productivity of the area is as follows:

TIMBER PRODUCTIVITY CLASS	NATIONAL FOREST ACRES	POTENTIAL ANNUAL YIELD (MBF)
High	-0-	-0-
Moderate	860	215.0
Low	4,981	547.9
Nonproductive	1,659	-0-
TOTAL	7,500	762.9

A RARE II Draft Environmental Statement was filed with the EPA and made available to the public on June 15, 1978. It included 10 Alternatives. In 9 of the alternatives, the Naneum and Lion Rock RARE II areas were allocated to non-wilderness uses. In the remaining alternative, both areas were allocated to wilderness. Public response to the Draft Statement included more than 264,000 replies from 360,000 people. This response, as well as existing laws and regulations was used to help develop the proposed action described in the RARE II Final Environmental Statement.

The Final Environmental Statement was filed with the EPA on January 4, 1979. It recommends 15,088,838 acres in 624 inventoried roadless areas for wilderness classification. It also recommends 36,151,558 acres in 1,981 areas for non-wilderness and 10,796,508 acres in 314 roadless areas for further planning. The Naneum and Lion Rock RARE II areas are included as non-wilderness in the preferred alternative and 1/4/79 decision.

Appendix J contains a description of the Alternatives considered in the RARE II Final Environmental Statement and the wilderness attribute rating sheets for the Naneum and Lion Rock RARE II areas. If further information on the RARE II process is desired, it may be obtained by referring to the RARE II Draft and Final Environmental Statements.

14. Research Natural Area (RNA)

Research Natural Areas are designated areas of land on which various natural processes are allowed to dominate and where some natural features are preserved for research and education. The main reasons for preserving these tracts are to provide:

a. Baseline areas against which the effects of human activities in similar environments can be measured.

b. Sites for study of natural process in undisturbed ecosystems.

c. Gene pool preserves for all types of organisms, especially threatened and endangered types.

Research Natural Areas are established on Federal lands. Cooperating agencies include the Forest Service, Bureau of Land Management, Fish and Wildlife Service, National Park Service and the Atomic Energy Commission.

Nominations of proposed Research Natural Areas are made to the Research Natural Area Committee for Washington and Oregon. This committee is composed of scientists and others who have knowledge of or concerns about the areas selected. Candidate Research Natural Areas are considered by the Committee which then recommends that they be established, dropped or re-examined.

The Taneum Lake area in the West Subunit on Manastash Ridge was proposed as an example of a subalpine fir forest type in about 1969. Several areas representing the subalpine fir forest type were already established or have since been designated. The Taneum Lake Area remained on the list of candidate areas since there were no established Research Natural Areas in this vegetative type in North Central Washington and the area seemed to meet suitability criteria. Recently the Research Natural Area Committee determined that the subalpine fir forest type is adequately represented in the region and that the candidate Taneum Lake Area does not meet a Research Natural Area need. It was consequently dropped from the list of candidate areas and is not included as an NRA allocation in the Preferred Alternative.

III. EVALUATION CRITERIA

Present management within the Unit is complicated by non-specific land management goals and resources uses. In the past, when demands for forest resources were not as great as they now are, conflicts between uses were not as significant. Heavily timbered areas in the West Subunit are rapidly being utilized for timber production with corresponding influence on other forest resources, especially water. Demands on all the resources of the Unit are increasing at an accelerating rate with the passage of time.

Consequences of proposed resource allocations must be recognized and evaluated. Multiple use means managing all resources in harmony but not necessarily on every acre. Some resource goals cannot be met without a specific allocation of land for a prescribed purpose.

A. Goals

Goals for the Kittitas Planning Unit were developed through the public involvement process and reflect the concerns of the public and land managers. The following goals for the Planning Unit were identified:

* Diversify and enhance existing habitat to sustain or improve habitat for game and nongame wildlife species.

* Manipulate elk habitat to sustain a balanced mix of forage and cover needs with emphasis on providing opportunities for unroaded hunting experience.

* Intensify range management to improve forage and provide more opportunity for livestock grazing.

* Optimize timber production based on site potential.

* Emphasize dispersed recreational activities.

* Maintain or enhance water quantity on those sites with a favorable cost/benefit ratio without impairing the soil resource or water quality.

* Produce land adjustment direction that meets the management direction of the selected alternative.

* Determine if existing utility corridors are adequate to meet future needs and whether or not alternate routes exist.

* Encourage extraction and availability of mineral resources.

* Maintain or increase the economic base of local communities.

B. Common Management Considerations And Goals

Various considerations apply to each resource management option because of laws, regulations, policies, or economics. The following are basic considerations applicable to all Management Areas and Alternatives in the Kittitas Land Management Plan.

1. Preserve water quality as defined by State and Federal Law. Implementation of the existing Region Six Streamside Management Unit Policy (Appendix E) affects management activities adjacent to certain classes of streams. Production figures in each Alternative are adjusted in accordance with this consideration. Quality control at the project level of management relates much more to compliance with State and Federal Law than the resource allocation process does. The Forest Service goal is to maintain water quality of all streams at the AA level.

2. Maintain soil productivity and stability. Project implementation has greater significance in meeting this consideration than resource allocation. Implementation of each Alternative is feasible with existing technology.

3. Provide habitat to sustain viable populations of dependent wildlife. This includes protection of key wildlife habitat such as riparian, talus, meadow fringes, calving and fawning grounds, snags and special habitats for threatened or endangered species.

4. Preserve endangered, threatened and unique species that use the Unit. In instances where management activities will place stress on existing plant and animal species in these categories, consideration for the species will take precedence over the activity.

5. Historical and archeological sites will be inventoried and evaluated to assure compliance with the National Historic Preservation Act of 1966 and Executive Order 11593, May 13, 1971, "Protection and Enhancement of the Cultural Environment." Before initiating any ground disturbing projects resulting from implementing any Alternative, a reconnaissance will be conducted to identify historical or archeological sites or areas.

6. Consider recreation and visual quality in the development of Alternatives. Production figures in each Alternative were adjusted to meet VRM objective.

7. Alternatives must be economically feasible. There must be a reasonable expectation that resources will exist to implement and administer the Alternative.

C. Legislation and Planning

1. Area 2 Planning Area Guide

The 1975 Planning Area Guide for Area 2 (northeast Washington) was used as a reference in the preparation of this Unit Plan.

The objective of the Planning Area Guide is to provide broad land use planning direction to be followed by all Forest Service units with land management responsibilities inside the area. The Guide assesses the conditions that exist on the Planning Area at present and then makes projections as to what conditions will exist in the future in terms of demand for goods and services from National Forest land.

2. Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) Background

RPA directs the Forest Service to periodically assess the condition of, and demands for, goods and services from National Forest lands. From this "Assessment", a plan is constructed outlining alternative "programs" of management and the broad national goals pertinent to each. After public review, a "Recommended Renewable Resource Program" is selected and presented to the President by the Secretary of Agriculture as the Secretary's recommendation for Forest Service actions to help solve the problems and take advantage of the opportunities in the Assessment.

For RPA planning purposes, RPA goals were broken down and categorized for six "Resource Systems" encompassing all of the management activities of the Forest Service. These resource systems are outdoor recreation and wilderness, wildlife and fish habitat, range, timber, land and water, and human and community development. With few exceptions, the RPA recommended level of outputs for future decades is substantially increased over current levels of output. A condensed summary of key primary outputs, inputs, costs and Forest Service personnel needs for fiscal years 1977-80 and on an average annual basis for each following decade through the year 2020 may be found in Appendix H.

A key factor in RPA is that Programs are developed along with estimated Forest Service budget and personnel needs required to accomplish them. Each year, when the President transmits his proposed Forest Service budget to Congress, it is accompanied by a budget explanation describing the relationship between the budget request and the Program. The eventual selection and funding of one of these programs sets the framework of goals within which National Forest lands are managed. It is the intent of RPA that this approach will be continuous with new Assessments every 10 years and a Program revision every 5 years.

RPA Relationship to Unit Plan

To date, the national resource output goals established through RPA have been refined only to the Regional level, i.e., Oregon and Washington. No specific goals in terms of resource output have been established on a National Forest basis. The Kittitas Planning Unit encompasses only about 12 percent of the Wenatchee National Forest in respect to land area. Thus, it is particularly difficult to relate the outputs for the Planning Unit to RPA goals and no direct comparison would really be meaningful.

Budgets impose another consideration in review of the alternatives outlined in this Unit Plan. The outputs for the Management alternatives are constrained by current estimates of the budget levels that will be forthcoming in the future. The budget levels anticipated are commensurate with today's manpower and dollar levels and do not envision large increases. If such increases were received, some resource outputs could be substantially elevated while retaining the same land allocation.

Nonetheless, the broad goals established by RPA were used as a general framework in which to construct this plan. The trends established by RPA are definite guides as to the direction lands in the Planning Area should be managed. However, the physical characteristics of the area facilitate the satisfying of some goals better than others. As an example, dispersed recreation use may substantially increase under most alternatives but timber yield only to a minor degree. Budget levels can also affect the outputs by changing the intensity of management. Ultimately, it is the aggregation of outputs from many areas that will permit the attainment of most RPA goals.

IV. ALTERNATIVES CONSIDERED

A. DEVELOPMENT OF ALTERNATIVES

The development of alternatives actually began in the early stages of the planning process when the applicable laws, regulations and policies were meshed with input from the public to produce a set of planning goals for the Planning Unit (See Section III - A, B and C). The next major step involved an inventory of the Planning Unit to measure resource capabilities and limitations. For the most part, this type of information was already on hand in the form of specific resource inventories, historical files, libraries, current studies and plans. However, occasional field work was necessary to round out the data base and fill in gaps. This inventory information was then placed on mylar overlays of the Planning Unit showing such information as timber and forage production capability, fuel loading, visual classification, soil sensitivity, special wildlife habitat, etc. See Appendix A-32 through A-37 for examples of rating systems for timber productivity, etc.

The compilation of overlays depicting resource capabilities and limitations identified "Management Areas" which would respond similarly to management planning goals layed down for the Planning Unit. A particular Management Area may vary in size and appear in one, several, or all of the alternatives and can be defined as land or lands possessing similar characteristics which can be expected to respond similarly to a given set of management objectives.

An understanding of Management Areas is crucial to understanding any alternative since each alternative is a result of a particular combination of Management Areas. Eight Management Areas were identified and utilized in this land management plan in the formulation of alternatives. Each Management Area specifies the strategy that will produce the desired management direction. Certain goals and policies apply uniformly to all land management allocations and alternatives. They are as follows:

1. All relevant laws and regulations apply.

2. Forest Soils, Streamside Unit, Visual Resource Management and Snag Policies and water quality standards apply.

3. Preserve threatened and endangered plant and animal habitats.

4. Mineral, power, flood control, reclamation, water and other entry rights are retained.

5. Existing legal rights are retained.

6. The Wenatchee National Forest Off-Road Vehicle (ORV) Plan applies.

Descriptions of the eight Management Areas applicable to this Plan are as follows:

MANAGEMENT AREA A

Management in this area is intended to produce a maximum amount of wood fiber from timbered lands while fully protecting the water and soil resource. This will result in increased forage production for livestock and wildlife and increased dispersed recreation use.

Management Strategy

1. Present timber stands will become converted to healthy, vigorous, well spaced conditions. A growth standard of 15 rings per inch will be used to determine optimum stocking.

2. Species variety will be encouraged by a combination of planting and natural regeneration.

3. The Wenatchee regeneration period standard is: Two years from severance to new plantation plus two years from re-examination for a total regeneration period of four years. At the end of four years, 95 percent of the regeneration acres will be satisfactorily stocked.

4. Where feasible, stands will contain more than one age class to provide variety and maximize site utilization by trees.

5. Twenty year cutting cycles will be the standard for re-entry into stands eligible for stocking control.

6. Trees will be kept at numbers that will give optimum diameter and height growth. Some stands will appear park-like. Age, spacing and number of trees per acre are approximately as follows:

Age	Spacing	Trees per Acre
Seedlings and Saplings 0 to 30 years	12 to 18 feet	200 - 400
Poles to sawlogs 20 to 100 years	18 to 20 feet	100 - 140
Large sawlogs 100 + years	20 to 25 feet	70 - 100

7. For planning purposes, rotation age will be 130 years in Douglas-fir and associated species and ponderosa pine stands and 100 years for lodgepole pine. However, commercial thinning can be done as long as stands will release and grow at 15 rings per inch at the appropriate stocking level.

8. Forest residues (slash and natural) will be kept at a level that will maximize nutrient recycling, yet permit control of wildfires.

9. Erosion control seeding in the managed timber producing areas is restrained so that it does not keep tree establishment from reaching desired stocking levels. However, first priority will be given to maintaining soil productivity.

10. Other resource uses are permissible to the extent that they do not significantly inhibit timber and forage production on productive sites. Utility corridors will be permitted if needed in this area.

11. Existing snags will not be felled during harvesting operations except as required for safety reasons.

12. Where practical, special areas in powerline corridors and old burns, etc., may be managed for huckleberry production, Christmas trees, etc.

13. Off-road vehicle use will be managed under the Wenatchee National Forest Off-Road Vehicle Plan.

14. These lands are available for exchange based on more efficient management.

15. Mining activity is permitted under existing laws and regulations. Extensive road systems will enhance this activity.

16. Control of wildfire will be an aggressive action involving fuel breaks, pumper water development and control action consisting of road and fireline construction with heavy equipment.

17. Roaded dispersed recreational management will be emphasized.

18. Timber management will continue to provide the transitory range base for livestock grazing.

19. The visual resource management standard for this Management Area is the same as in the current inventory except that the Retention and Partial Retention areas along the Pacific Crest National Scenic Trail are changed to Modification.

MANAGEMENT AREA B

The purpose of this management is to maintain as nearly as possible optimum cover-forage conditions for big game on winter range.

Management Strategy

1. The purpose of timber management is to treat timbered portions in a manner that maintains optimum cover conditions for big game. In this case, timber stands are treated so that 20 percent is in hiding cover and 20 percent in thermal cover. This will allow a fairly intensive timber treatment in heavily timbered areas. However, in the sparsely timbered areas that make up a bulk of the winter range, manipulation would normally be light in order to maintain the desired amount of cover. A timber treatment that will provide these cover conditions is outlined in Management Area C.

2. Riparian vegetation will be established and/or maintained to provide optimum food and cover conditions along streamcourses.

3. A natural variety of grass, herbs and shrubs will be permitted to develop, but will be supplemented with seeding or planting of additional vegetation in disturbed or treated areas.

4. Transportation systems will be the minimum necessary.

5. Where livestock allotments occur on the winter range, 50 percent of the total AUM's are allocated to big game use.

6. Snags and snag habitat will be managed to maintain 60 percent of the maximum potential population of snag-dependent wildlife. Guidelines for accomplishing this are in Tables 1 and 2 in Appendix F.

7. Other resource uses are permissible to the extent that they do not inhibit maintenance of optimum big game winter range habitat conditions. Utility corridors are not compatible with this management.

8. Off-road vehicle use is managed under the Wenatchee Off-Road Vehicle Plan. However, seasonal closures may be necessary in specific areas to prevent big game harassment.

9. Mining activites are operated under existing regulations.

10. The VRM standard for this Management Area is the same as in the current VRM Inventory.

11. These lands are available for exchange based on most efficient Management.

MANAGEMENT AREA C

The purpose of this management is to maintain optimum conditions for big game in critical habitat areas and provide conditions that offer opportunities for big game hunting with limited road access. Physical factors most important to achieve the desired conditions are limited road access, big game populations and ample escape cover for game. While access and animal numbers can be manipulated, maintaining escape cover is only possible through long-range planning.

Management Strategy

1. Timber management including harvesting will be used as a tool for manipulating timber stands to achieve desired cover conditions. Desired cover conditions are described as follows:

   a. Hiding cover is vegetation capable of hiding 90 percent of an elk from view at a distance of about 150 feet. This is commonly called a sight distance.

   b. Patches of hiding cover should be from four to eight sight distances (600-1,200 feet) wide and about 6.5 to 26 acres in size. Cover patches should be of varied sizes and shapes (maximize edge effects).

   c. Optimum habitat conditions are defined as 40 percent cover (hiding and thermal) and 60 percent forage areas. The patches of cover and forage areas should be properly arranged throughout the area to maintain the 40-60 proportion. Critical areas such as calving areas may require more cover.

      In some cases, due to the existence of natural openings, it may not be possible to maintain 40 percent of the area in hiding cover. This situation would be most likely to occur in the East Subunit where timber occasionally exists only in "stringers" on open hillsides. Our emphasis in such situations would be to preserve what existing cover is available. Timber harvest would still be allowable for emergency situations such as fire salvage, insect and disease attack, etc. In other cases, past cutting may have already reduced the available hiding cover to less than 40 percent. Our emphasis here would be to delay further cutting except for emergency situations until hiding cover is brought up to the desired level.

   d. Cover is most effective adjacent to wet or moist areas such as meadows, streams and springs.

   e. Cover is least effective when adjacent to or bisected by actively used roads.

Timber stands will normally be permitted to develop naturally in dense thickets. Where stands have grown past the point where they are providing desired cover, timber harvesting--regeneration techniques will be employed to re-establish cover. This may include individual tree selection, small patch cuts, shelterwood cuts or other techniques depending on which method best meets silvicultural and cover objectives. In all cases, the attempt will be made to limit openings created through timber harvesting to sizes and shapes that create unobstructed site distances less than 150 feet.

It is assumed that harvest cutting will occur at the planned intervals of 100 years for lodgepole pine and 130 years for other species. More frequent entries may occasionally be necessary to maintain optimum habitat conditions.

2. The modified form of timber management included in this activity provides overstocked stands where natural tree mortality will create snag habitat at approximately 60 percent of potential. Guidelines for managing snag habitat at this level are in Tables 1 and 2 of Appendix F.

3. The importance of the timbered "fringes" of meadows for many species of wildlife is recognized. They will be protected and managed primarily for their wildlife value on a prescription basis.

4. Non-timbered areas will be recognized primarily for forage value and habitat.

5. Other resource uses are permissible to the extent that they do not inhibit the primary objective, which is maintenance of cover and limited road access.[1/] Utility corridors are not compatible with this proposed management.

6. Fire protection activities such as hazard reduction and fuel break construction may occur as long as habitat conditions are not significantly altered as a result.

7. Disturbed sites may be seeded with vegetation in order to stabilize soils and restore forage, consistent with the cover maintenance objective.

1/ The guidelines for limited road access is to confine public motorized access to about two miles of road per section during hunting season. This two miles includes trails and 4-wheel drive routes. Plans for closure will include public involvement, considerations of traditional uses such as campsites, water supplies and hunting methods and coordination with the Game Department.

8. The transportation system will be the minimum necessary to accomplish resource management activities with emphasis placed on limited road access.[17] Road location and design will not be based solely on log hauling requirements, but will consider the effect on big game movement and habitat. This will likely result in higher transportation system costs than where systems are designed primarily for log haul efficiency.

9. Off-road vehicle use is managed under the Wenatchee National Forest Off-Road Vehicle Plan. However, seasonal closures may be necessary in specific areas to prevent big game harassment.

10. Mining activities are operated under existings laws and regulations.

11. These lands are available for land adjustment based on more efficient management.

12. The VRM standards for this Management Area are the same as those in the existing VRM inventory.

MANAGEMENT AREA D

This area is managed to provide opportunities for most forms of dispersed recreation normally identified with National Forests in North Central Washington while complementing associated developed recreation attractions. This usually involves combinations of activities such as viewing scenery, hunting, fishing, rock hunting, observing wildlife, snowmobiling, camping, hiking, backpacking, ORV use, motorbiking, and harvesting minor products such as berries, firewood, and mushrooms. The opportunity for experiencing these pastimes in varying degrees of remoteness is provided.

Management Strategy

1. The area is managed in a natural appearing condition with the following exceptions:

    a. The area is managed primarily for enhancement of recreation experience. Suitable roads, hiker trails, campgrounds, ORV trails, 4-wheel drive routes, and sanitary facilities are provided for site protection and convenience according to needs.

    b. Minor changes in natural occurring ecosystems are designed to provide needed vegetative dynamics for maintaining wildlife habitat as well as mushrooms, berries and pleasing scenery. Fire and logging are foreseen as the principal techniques but this does not discount the possibility of other methods.

    c. A network of fuel breaks may be constructed and maintained to provide opportunity for control of conflagrations. The means of prevention and control of fires will depend on a variety of factors including fuel types and dispersed recreation values involved in particular areas.

    d. Streams and lakes will be managed primarily for their fishing potential and visual attraction. This may require occasional measures to prevent streams from becoming clogged with decadent vegetation and to prevent streambank erosion.

2. Off-road vehicle use is managed under the Wenatchee National Forest Off-Road Vehicle Plan.

3. The landownership adjustment goal will be designed to retain and block up public ownership in this Management Area.

4. The transportation system will be designated to provide low density, minimum standard roads where maximum speeds will be 25 MPH. Short-term project roads will be closed and obliterated whenever possible.

5. Mining activities are permitted under existing laws and regulations.

6. The minimum visual resource management standard for this Area is Partial Retention.

7. Other resource uses will be permissible to the extent that they do not inhibit or detract from recreation values. Utility corridors will be routed around this Management Area.

MANAGEMENT AREA E

The objective of this form of management is to provide habitat for those species of wildlife dependent upon old growth and solitude habitat.

Management Strategy

1. The timber stand characteristics necessary to provide old growth habitat will include mature tree species that are at least 21 inches in d.b.h. and contain 35 or more stems per acre. In addition, the stand condition will show evidence of heart rot or other signs of decay including an abundance of down logs and standing snags. At least two snags per acre of the 21 inch d.b.h. class should be present. The combined overstory and understory canopy should reflect a 70 percent crown closure.

2. The amount of old-growth condition to optimize wildlife habitat is estimated to be about five percent of the timbered acres within the planning area. The strategy will be to use and to take advantage of those stands of old-growth not specifically oriented to satisfy wildlife habitat such as Streamside Management Units, Roadless Areas, Proposed Natural Areas, etc. The exact amount of old-growth stands available through this management strategy will depend on the alternative selected.

3. An additional 1,600 acres of CFL have been selected and distributed throughout the Planning Unit in Alternatives 3 and 4 to supplement those habitat areas explained in Item 2, above. An additional 1,300 acres were selected in Alternative 5 for the same purpose.

4. In order to maintain the selected old-growth areas, it will be necessary to program additional nearby replacement stands in younger age classes to serve as eventual substitutes for the old growth. Silvicultural treatment to develop the array of age classes needed may be necessary. The necessity of replacement stands will triple the acreage devoted to selected old growth.

   Optimum stand characteristics for old-growth wildlife habitat occur in the 160-240 year age class. This means that the viable life of the old-growth stand for wildlife habitat and solitude will be approximately 80 years. Replacement stands in the 0-80 year and 80-160 year age classes will be programed with an extended rotation to assure that the old-growth condition can be perpetuated. Selected stands will be a minimum of 30 acres in size. An example of a selected old-growth area is as follows: 30 acres in the 0-80 year age class; 30 acres in the 80-160 year age class; and 30 acres in the actual old-growth or 160-240 year age class. The three age classes would be located adjacent to or in the immediate vicinity of one another. The total acreage of such areas in Alternative 3 would be 3 x 1,600 acres, or approximately 4,800 acres.

5. Silvicultural treatment of the selected stands will involve the same practices as applied to Management Area A up to the end of the normal rotation length (100 years in lodgepole pine; 130 years all other species). At that point and until the stand is regenerated at approximately 240 years of age, only limited silvicultural entries will be made. Such entries would consist primarily of projects to remove and control excessive insect and disease infected timber and to insure the preservation of these stands through the period when an old-growth condition is desired.

6. Although three acres of CFL must be allocated for maintaining each acre of old growth, the extended rotation age of 240 years will reflect a reduction of only 30 percent in yield. (See Appendix A, Timber Productivity Outputs).

7. Other resource uses can occur as long as they do not degrade the desired habitat condition. Utility corridors are not permitted in or in proximity to these Areas.

8. Mining activities will operate under existing laws and regulations.

9. Off-road vehicle use is operated under the Wenatchee National Forest Off-Road Vehicle Plan.

10. These lands are available for land ownership adjustment based on more efficient management.

MANAGEMENT AREA F

The purpose of this management is intended to maintain the undeveloped nature of the area considered.

Management Strategy

1. The area will not be considered for commercial timber harvesting. Major insect infestations or disease epidemics may require salvage operations.

2. The area will be managed primarily for unroaded dispersed recreation.

3. Recreation developments may be employed to provide site protection.

4. There will be no road construction within the area.

5. Established ORV use consistent with the existing Wenatchee National Forest Off-Road Vehicle Plan may continue. However, no new ORV trails or 4-wheel drive routes will be established. ORV use that would permanently impair the wilderness quality of this Management Area would be prohibited.

6. Other resource uses will be permitted to the extent they do not change the undeveloped character of the area. Utility corridors will not be permitted in these Management Areas.

7. Mining activities will be operated under existing laws and regulations.

8. The VRM standard for this area remains the same as it currently is in the existing VRM inventory.

9. The land adjustment objective for Management Area F would be to retain Forest Service ownership.

PROPOSED RESEARCH NATURAL AREA

The objective of this management is to provide bench mark areas for education and research that offer base line data against which effects of human activities in similar environments can be evaluated. It deals exclusively with those areas currently proposed for Research Natural Area Classification.

Management Strategy

1. The guiding principle is maintenance of the natural ecosystem.

2. Physical improvements such as roads, trails, fences and buildings are generally not allowed except those essential to research and education objectives. The existing Taneum Lake Trail is permitted. Utility corridors are not permitted.

3. Wildfires are extinguished as quickly as possible. No fire management activities such as hazard reduction or reforestation are allowed.

4. Insect or disease control programs are not carried out except where adjacent important forests are threatened or where infestation will drastically alter the natural ecological processes within the area.

5. Ecology of the area can be treated as necessary to preserve the desired situation. This may include careful removal of excess wildlife populations such as elk and deer. Such activities as timber harvest and livestock grazing are normally excluded.

6. Hunting, fishing, and trapping is generally permitted subject to State regulations. However, public recreation may be discourage if use levels become so high that they threaten research values.

7. ORV use is not permitted in this Area.

8. Mining activity is operated under existing laws and regulations.

9. The visual resource management standard for this Area is Preservation.

10. The land adjustment objective for the Proposed Research Natural Area would be to retain Forest Service ownership.

GENERAL FOREST

Management of most of this area is intended to provide a sustained production of high quality timber while recognizing associated values and protecting water quality and recreational features of the area. At higher elevations recreational values are emphasized in some areas while other parts are managed for most National Forest purposes including the optimum sustained production of timber.

Management Strategy

1. The commercial forest land will be managed under the present multiple use plans with existing visual and streamside management constraints. All resources will receive optimum consideration, but timber is recognized as the key value with a high-level sustained production of quality timber as the goal. Intensive silvicultural practices will be applied to:

    a. Develop and maintain an even distribution of age classes.

    b. Obtain prompt and complete regeneration with desirable species.

    c. Secure favorable and sustained growth in young stands through repeated thinnings where practicable.

    d. Reduce losses by fire, wind, insects, and diseases.

2. At higher elevations manage for the kinds and types of recreation use to meet present and potential needs, recognizing that the recreation resource is the key value in those portions of the Management Area having one or more of the following characteristics:

    a. Plateaus and benches containing a series or group of small lakes, or containing a combination of lakes, meadows, and open clumplike stands of timber.

    b. Rough broken topography with rock slides, snow avalanches and other features that make the area significantly scenic.

    c. Areas where the timber stands are narrow fringes or stringers lying as buffer strips adjacent to highly scenic alpine areas.

    d. Areas previously defined as having a visual quality objective of Retention.

3. Mining activities are operated under existing laws and regulations.

4. All other resource uses are permitted provided that they do not conflict with the existing multiple use plans.

5. Lands in the General Forest category are available for exchange based on more efficient management.

B. DESCRIPTION OF ALTERNATIVES

Seven land management alternatives, including a no change alternative, are displayed in this document. Alternative 7, the preferred alternative, is a refinement of Draft Environment Statement Alternative 2. All alternatives recognize the planning goals and include the common management considerations listed in Section III.

Alternative No. 1 is oriented toward commodity production with particular emphasis on wood and forage production. Small acreages are allocated to a Research Natural Area and to elk winter range. The Management area acreage allocation for Alternative 1 is on Page 82.

Alternative No. 2 provides for a relatively high production of commodities while also emphasizing land allocations providing unroaded dispersed recreation opportunities and maintenance of elk habitat. Acreages allocated to a Research Natural Area and to elk winter range are the same as in Alternative 1. This was the Preferred Alternative of the Draft Environmental Statement. Management area acreage allocations for Alternative 2 are on Page 86.

Alternative No. 3 emphasizes the maintenance and improvement of elk habitat while providing the second highest commodity output of the seven alternatives. Special old growth timber areas are set aside for wildlife species requiring that habitat condition. No specific allocation is made to unroaded dispersed recreation although the elk habitat allocation will provide that use to some degree. As in Alternatives 1 and 2, small land allocations are made to a Research Natural Area and elk winter range. Please refer to page 90 for the management area allocation for Alternative 3.

Alternative No. 4 is a resource mix that allocates land to commodity production, elk habitat maintenance and improvement, and unroaded dispersed recreation. A small allocation to old growth habitat is also made. Allocations to elk winter range and the Research Natural Areas are the same as in Alternatives 1, 2 and 3. See page 93 for the management area allocation for this alternative.

Alternative No. 5 is an amenity and wildlife habitat oriented alternative. It proposes further wilderness study for the two RARE II Roadless Areas on Table Mountain. The remainder of the Planning Unit is managed the same as in Alternative 3. Refer to page 97 for the management area allocation for this alternative.

Alternative No. 6 is the existing management situation (no change alternative). The disposition of the two undeveloped areas identified in RARE II was achieved through the RARE II Environmental Statement process. See page 100 for Alternative 6 Management Area allocations.

Alternative No. 7, the Forest Service preferred alternative of this Final Environmental Statement provides a balanced mix of lands allocated to timber production, wildlife habitat and recreation. The Research Natural Area allocation is not included in this alternative. The Management Area allocation selected for this alternative is depicted on page 103.

The proposed management in each Alternative applies only to National Forest land. Much of the West Subunit is intermingled private and public ownership. Management objectives and techniques on the private and public lands may be different and thus forest visitors may not see uniformity of management in some areas.

V. EFFECTS OF IMPLEMENTATION

A. MANAGEMENT AREAS

The following refers to environmental effects within the eight Management Areas. A particular Management Area may occur in all, several, or only one of the alternatives. Refer to Section IV for descriptions of each Management Area.

1. Management Area A

The objective of this Management Area is to produce a maximum amount of wood fiber from timbered areas while fully protecting the water and soil resource.

Air Quality and Noise

There will be a greater potential for air quality degradation and noise in this Management Area than any of the others because of the extensive management activities that may occur.

Soil

Intensive management will require frequent entries to harvest timber, treat residues, plant and thin trees or increase forage. An extensive transportation system will be needed to intensively manage wood fiber. Construction and maintenance of these improvements and timber harvesting will have the potential for soil disturbance and increase the chance of man caused soil losses.

Water

Approximately 15 percent of the land in this Management Area will be in a condition varying from bare ground to seedlings and sapling trees and associated brush, forbs, and grass at any point in time. As a result, more precipitation in the form of snow will accumulate in managed areas. There may be an increase in runoff and sediment at certain times because of reduced mature stands. Stream management considerations will often limit activities adjacent to streams. Maintenance of water quality will have precedence over activities such as timber harvesting and road construction.

The State water quality standards for streams that occur on the Unit are AA or A. The existing water quality class of streams on the Unit are AA and the goal for all alternatives is to maintain streams at the AA class level. Appendix E summarizes the State water quality classification system.

In areas where stream management considerations reduce timber productivity (Class I and II streams), output will equal approximately 70 percent of the potential.

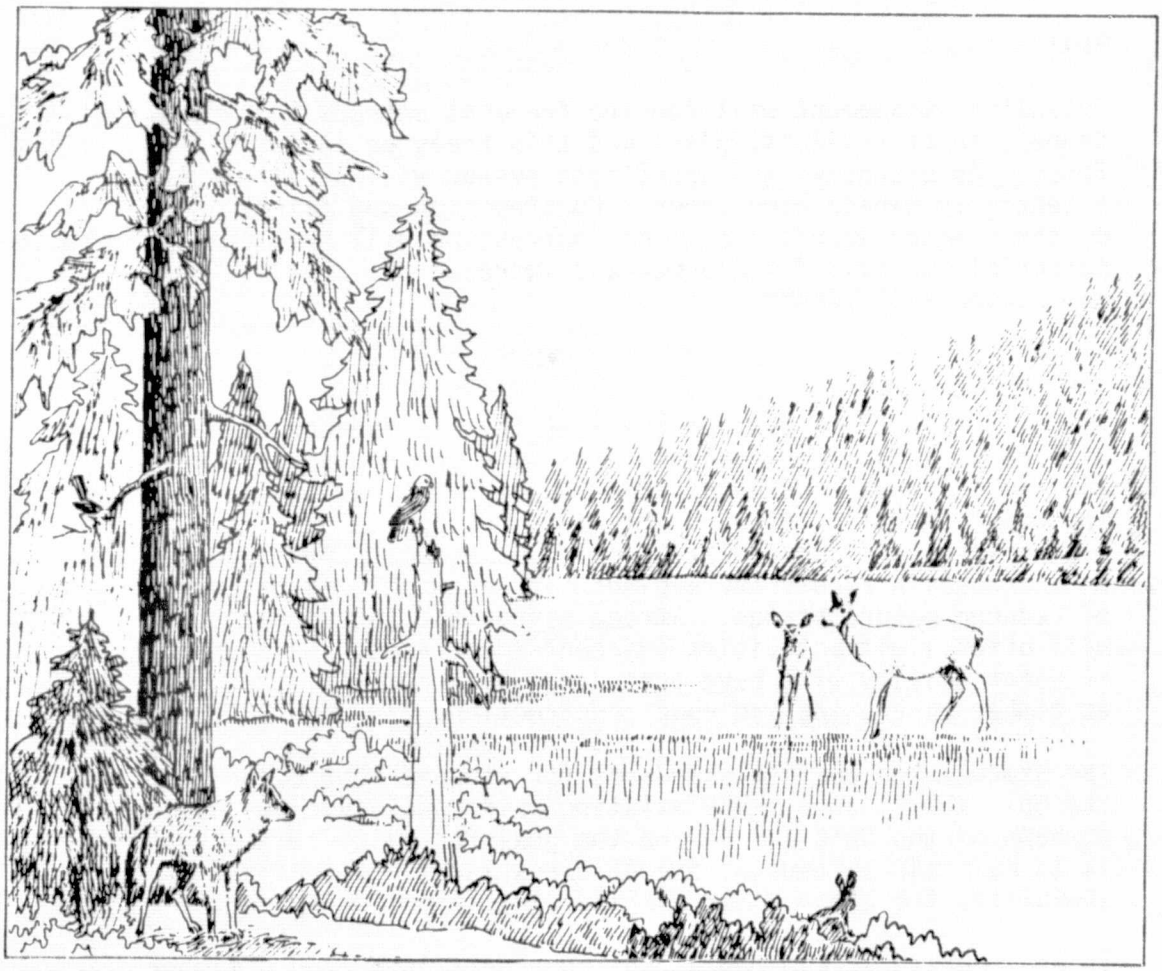
Floodplains and Wetlands

This management has the greatest potential of affecting floodplains and wetlands because of the large area it encompasses.

Timber and Vegetation

This management activity is designed to produce healthy, vigorous stands of timber while providing forage for livestock and wildlife habitat variety without appreciably restricting timber yields.

Harvest age will be 130 years in Douglas-fir and ponderosa pine and 100 years for lodgepole pine. Where feasible, stands will contain more than one age class to provide variety and maximize site utilization by trees. Twenty year cutting cycles will be the standard for re-entry into stands that need treatment. Tree canopy will average 75 percent closure.



A VARIETY OF PLANT COMMUNITIES AND FOREST AGE GROUPS FROM YOUNG TO OLD PROVIDE MANY HABITAT NICHES WHERE ANIMALS AND BIRDS CAN LIVE.

Ideally, the result of this management would be a planned balance of open forage areas to timber areas (cover) uniformly distributed through the elk range. Optimum elk habitat is defined as 60 percent forage area and 40 percent cover. This management will strive to attain optimum conditions. Optimum conditions will occur infrequently because of efforts to grow trees.

Other effects on vegetation because of activites such as timber removal, residue management, etc., are anticipated to be as follows:

a. Areas of old growth climax timber containing large volumes of hemlock and cedar will decrease.

b. Shade tolerant species will decrease.

c. Native species of trees, brush, and grasses that persist following management activities will tend to fill any voids in restocked or thinned areas.

d. Soils seeded with domestic grasses, such as orchard grass, timothy, hard fescue, smooth brome, and intermediate wheatgrass, will remain dominant over the native grasses for five-ten years after establishment. Forage production on a seeded area may be twice that of a non-seeded area.

Range

A reduction in crown density will result for those timber stands intensively treated. This situation will increase the transitory range 1/ potential by enhancing conditions for increased forage production. However, one to three seasons may be necessary to establish native or domestic grasses prior to utilization of the forage by livestock. Refer to Appendix A for grazing calculations involving projected transitory range areas.

This form of management will augment the grazing potential of existing allotments. In addition, the management and movement of livestock will be facilitated.

Wildlife and Fish

Elk habitat is managed to maintain a healthy herd at slightly higher levels than now exist while sustaining or improving forage conditions. Improved forage conditions on the summer-fall range will be favorable to big game. However, hiding cover may not be adequate in some areas resulting in a migration of elk out of these exposed locations.

1/ Refer to Appendix G for definition of transitory range.

With increased roading, the potential for elk harassment will increase. This will be most significant during those years when elk are forced to leave the undeveloped higher portions of their summer range because of inclement weather. Road closures may be necessary in some locations and at certain times.

Where this management occurs there will be less habitat areas for species requiring old growth conditions, such as the marten and blue grouse. On the other hand, the new habitat conditions will favor other species. The effects on specific wildlife species will vary according to the adaptability of each species to an altered environment. Factors such as territorial boundaries, size, shape and positioning of habitat types, are so interrelated that specific predictions of effects are unreliable. There will be reduced populations of species requiring old growth habitat.

There are 38 bird and 24 mammal species that utilize tree cavities for shelter and or nesting (life forms 13 and 14, Appendix F). The most important species of birds are the woodpeckers. Not only do they have an important role in controlling insects but many other insect eating bird species utilize the cavities made by the woodpeckers. If the woodpecker's requirements for hard snags are met, and existing and future soft snags are retained, the nesting and shelter requirements of all snag dependent species can be met. A viable population of these bird species requires maintenance of about 60 percent of the maximum potential population, and therefore 60 percent or more of the required snags.

Snags and dead trees will be retained in quantities sufficient to support more than 40 percent of maximum potential populations of snag-dependent wildlife. Some snag habitat above 40 percent is provided in areas constrained by visual Retention or Partial Retention zones, Class I and II streams and areas deferred from management because of watershed considerations.

In the East Subunit there are few fish streams. Effects on fish habitat may include minor localized water temperature increases. On the West Subunit, it may be necessary to limit or defer management in hydrologically sensitive areas to maintain water quality and fish habitat. This management has the greatest potential for degradation of fish habitat because of possible soil and stream disturbing activities.

Recreation

This management will favor roaded dispersed recreational activities. As a result, there may be an increase in the number of visitors seeking these activities. Roadside camping and

picnicking, motorized travel, berry and mushroom picking, wood gathering and hunting will be more convenient. Opportunities for unroaded (primitive) recreation will be reduced because of road construction and changes in stand character.

In some areas, big game cover will be scarce. Increased roading, together with less hiding cover for big game, will result in less opportunities for unroaded hunting. Some years, when weather forces elk to migrate earlier, it will take less time for hunters to harvest the allowable numbers of big game.

Historical, Archeological and Cultural

This management has the greatest potential for disturbing historical, archeological and cultural sites and areas.

Minerals

Mining activities will be operated under existing regulations.

Visual

Visual quality objectives remain the same as they are under the present management with one exception. The standard on Management Area A is lowered to Modification along the Crest Trail between Blowout Mountain and Yakima Pass.

Implementation of the visual management policy results in the following reductions in wood production.

a. Visual resource Retention - due to large tree objectives this activity will result in obtaining 75 percent of the potential.

b. Visual resource Partial Retention - constraints on complete removal of old growth will result in achieving 90 percent of the potential.

2. Management Area B

The objective for this type of management prescription is to maintain as nearly as possible ideal cover-forage conditions for big game on winter ranges. Because of the small areas of big game winter range on the Planning Unit, environmental effects of this management are minor. On the other hand, these Management Areas in conjunction with Game Department and private land winter ranges assume more importance because of their scarcity in these specific areas. These Management Areas occupy less than one percent of the Unit.

Air Quality and Noise

The potential for degrading air quality and increasing noise levels within this Management Area is minor.

Soils

There may be increased soil compaction in these Management Areas because of the numbers of animals that are confined in a small area.

Water

Maintenance of relatively high populations of livestock and big game has the potential for short-term degradation of water quality. Water quality will be maintained at State AA level over the long run. Increased total water flow will result due to more openings in timbered areas.

Floodplains and Wetlands

No effect is anticipated on these areas because of this management.

Timber and Vegetation

Timber management is adjusted to maintain near optimum habitat conditions for elk with emphasis on thermal cover. Some riparian vegetation may be lost. Timber harvest outputs will be 80 percent of potential because of limitations on thinning and harvest entries needed to maintain the game cover.

Range

Fifty percent of the forage resource is allocated to big game. The remaining forage is available for cattle or sheep. Timber treatments will provide additional forage for wildlife and livestock. No adverse effects on range management are anticipated.

Wildlife and Fish Habitats

Cover for big game will be maintained or improved. Snag habitat is maintained at about the 60 percent level. The potential for adverse changes in the quality of fish habitat because of this management prescription is minor.

Recreation

Dispersed recreational opportunities will be maintained at existing levels. Seasonal ORV closure may be necessary to minimize harassment of big game on critical winter range. There may be less hiding cover than currently exists in a few of the heavily timbered areas. Big game may not be willing to stay in these areas.

Historical, Archeological and Cultural

The potential for disturbing historical, archeological and cultural sites in this area are minor.

Minerals

Mining activities will be operated under existing regulations.

Visual

Existing visual quality objectives will be met by management prescriptions designed to maintain high quality cover-forage conditions on elk winter ranges.

3. Management Area C

The purpose of this management prescription is to provide and maintain optimum conditions for big game in critical habitat areas and provide conditions that offer opportunities for big game hunting with limited road access. The main impact of this management strategy is in areas where there is timber producing land. Since some areas are already nearly at an optimum condition of cover and forage, fewer opportunities for timber removal exist.

PATCHCUTS CREATE HABITAT VARIETY WHICH BENEFITS A LARGE NUMBER OF FOREST DWELLING ANIMALS AND BIRDS.

Air Quality and Noise

Air quality degradation and increased noise potentials are second greatest because of increased management activities over an extensive area.

Soils

There may be minor soil disturbance when timber stands are entered. Some soil compaction may occur in these areas and in areas where big game concentrate.

Water

No changes in water quality are anticipated because of this management. Water quality of streams will be maintained at the AA level.

Floodplains and Wetlands

Floodplains and wetlands will be maintained at approximately their present level. Some management activities may occur in these areas.

Timber and Vegetation

Timber production potential is estimated at 75 percent of that available from similar stands in Management Area A. Twenty-five percent of the timber potential is traded off to assure critical cover and provide primitive hunting opportunities. Dense stocking will favor the perpetuation of some insect and disease species compared to managed stands at optimum stocking levels.

Range

Forage production in timbered areas will be only 75 percent of that in Management Area A. Grazing of domestic livestock is permitted to the extent that it does not conflict with big game forage needs.

Wildlife and Fish Habitats

Cover for big game will be maintained or improved. The area of old growth timber may be reduced. Snag habitat will be maintained at about 60 percent or more of the maximum potential number for snag dependent species. Soil disturbing activities in this Management Area will increase the potential for degrading fish habitat.

Recreation

Some hunting opportunities in a natural appearing environment will be maintained. Necessary management activities may cause a temporary reduction in unroaded hunting conditions in localized areas. Both seasonal area and road closures may be necessary to maintain limited road access hunting conditions in some areas. Off-road vehicle use may be restricted in elk calving or deer fawning areas during the spring months.

Historical, Archeological and Cultural

The potential for disturbing historical, archeological and cultural sites is second greatest under this management.

Minerals

Mining activities will operate under existing regulations.

Visual

Existing visual quality objectives will be maintained via strategy designed to provide and maintain optimum elk cover.

4. Management Area D

This management strategy is designed to emphasize opportunities for most forms of dispersed recreation with emphasis on a natural appearing environment. This type of management primarily affects the timber resource. Timber removal is limited to that necessary to improve recreational and wildlife values.

Air and Noise

Little or no increase in air pollution or noise is anticipated because of this management.

Soils

There will be very little soil disturbance since the area is managed to maintain a near natural condition.

Water

Water quality and quantity remain approximately at existing levels. Water quality will be maintained at the AA level.

Floodplains and Wetlands

Floodplains and wetlands will be maintained in their present condition.

Timber and Vegetation

About 80 percent of the potential timber yield from these areas is not available since these areas are maintained in a near natural condition. Permissible cutting is limited to that necessary to improve conditions for recreation or wildlife. This will usually consist of removing certain dead, dying or danger trees. Small patch cuts may be necessary to improve conditions for some forms of wildlife. Existing ecosystems including berry patches are maintained.

Near natural and dense stands of timber will be more favorable to the buildup and spread of certain damage causing insects and diseases. Heavy fuels will tend to accumulate with a consequent higher resistance to control when fires occur. These natural forces could spread into intensively managed areas such as Management Area A.

Range

Livestock grazing is maintained at about the present level. If conflicts occur between recreation activities and range, they will be decided in favor of recreation.

Wildlife and Fish Habitats

Wildlife habitat improvement is permitted. Big game habitat is maintained at about the present level. Old growth conditions in this Management Area will exist. Snag habitat will be provided at almost 100 percent of the potential for snag dependent species. The quality of fish habitat will be maintained at present levels in this Management Area.

Recreation

Dispersed recreational opportunities in a scenic environment will be retained. Much of this Management Area was identified as having a low visual absorption capability.1/

Recreation improvements for user convenience are permissible. Off-road vehicle use is an acceptable recreational activity in this Management Area. However, in addition to being managed to prevent resource damage, controls may be invoked where necessary to meet the objective of maintaining a natural appearing environment. Road location and design standards will fit the objective of maintaining a natural appearing environment.

Historical, Archeological and Cultural

The potential for disturbing historical, archeological and cultural sites is slight because of the limited management activities that occur.

Minerals

Mining activities are operated under existing regulations.

1/ Refer to Appendix G for a definition of VAC-Visual Absorption Capability.

Visual

The strategy outlined to emphasize opportunities for dispersed recreation with emphasis on a natural appearing landscape will result in a minimum visual resource management objective of Partial Retention. In most instances, this standard will be exceeded.

5. Management Area E

The objective of this management strategy is to provide specific habitat areas for those species of wildlife dependent upon old growth timber.

Air Quality and Noise

Air quality and low noise levels will be maintained.

Soils

There will be very little soil disturbance in these Management Areas until a stand is harvested. This occurs at infrequent intervals and usually after the stand is 250 or more years of age.

Water

Some of these areas occur on hydrologically sensitive sites. Water quality on these sites will be retained at high levels. However, overall effects on water quality from this form of management will be minor because of the small area involved.

Floodplains and Wetlands

Floodplains and wetlands will be maintained in their present condition.

Timber and Vegetation

Timber yields will be about 70 percent of the potential because of the limited harvest entries and the extended age of timber stands necessary to sustain old growth wildlife habitat. Additional nearby younger stands will be selected and managed to serve as eventual substitutes for the old growth in Management Area E.

Near natural growing and old growth stands will be more favorable to the buildup and spread of certain damage causing insects and diseases. Heavy fuels will tend to accumulate with a consequent higher resistance to control. Costs of residue management will increase in these areas because of the heavy buildup of residues.

Range

These areas will provide few opportunities for transitory range.

Wildlife and Fish Habitats

Hiding cover for big game is provided in younger stands and thermal cover in all stands that are more than 40 feet tall. Snag habitat is provided to sustain 100 percent of maximum potential population of snag-dependent wildlife. This management has little effect on the quality of fish habitat.

Recreation

The effect on recreation is minor. Recreation opportunities will normally be the same as those in undeveloped areas. These Management Areas would be infrequently visited by recreationists because of their location on steeper terrain, old growth conditions, etc. Some dispersed activities such as hunting may occur.

Historical, Archeological and Cultural

The possibility of disturbing historical, archeological and cultural sites and areas is slight because of the limited acreage involved.

Minerals

Mining activities are operated under existing regulations.

Visual

The management strategy designed to maintain these areas as old growth and solitude habitat exceeds the existing visual quality objectives.

6. Management Area F

The objective of this management strategy is intended to maintain the undeveloped nature of these areas for further planning.

Air Quality and Noise

Air Quality and the noise will be maintained at existing levels.

Soils

Soil conditions will be maintained at existing levels.

Water

Water quality and quantity will not be changed. Stream water quality standards will be maintained at the AA level.

Floodplains and Wetlands

Floodplains and wetlands are maintained in a natural condition.

Timber and Vegetation

There will be very little man caused vegetative disturbances. A potential annual yield of 1.5 MMBF of timber would be foregone if the area were classified as wilderness.

Range

Range management activities will continue at existing levels as long as they do not detract from the undeveloped values of the area.

Wildlife and Fish Habitats

Existing cover conditions for big game are maintained. Few opportunities will be available to enhance big game habitat or fisheries. Snag habitat is maintained at 100 percent of maximum potential populations of snag-dependent wildlife. Fish habitat will be maintained at approximately the existing level.

Historical, Archeological and Cultural

The potential for disturbing any historical, archeological and cultural sites or areas is remote because of the type of management.

Recreation

Recreation opportunities that currently exist in these undeveloped areas will be maintained.

Minerals

Mining activities will be operated under existing regulations.

Visual

Visual quality standards are raised to Retention to be in line with the objective of maintaining the undeveloped nature of Management Area F.

7. Proposed Research Natural Area

The Management Area objective is maintenance of the natural ecosystems of the area for scientific study. This area occupies about one percent of the Unit.

Air Quality and Noise

Air quality and noise levels are maintained at existing conditions.

Soils

Soils will be maintained in the current condition. There will be no soil disturbance.

Water

Water quality will remain high at the AA level. The effect on water quantity is minimal and it remains at present levels.

Floodplains and Wetlands

Floodplains and wetlands are maintained in a natural condition.

Timber and Vegetation

Existing vegetation is maintained. Logging activity is excluded and timber harvest outputs are nil. An annual potential yield of 198 MBF of timber is not available.

Range

Domestic livestock grazing is excluded.

Wildlife and Fish Habitats

Existing wildlife habitat is maintained. Snag habitat is provided to sustain 100 percent of potential populations of snag dependent wildlife. Fish habitat is maintained in its present condition.

Recreation

Opportunities for dispersed recreation are maintained at present levels.

Historical, Archeological and Cultural

Potential historical, archeological and cultural sites will be maintained in their present condition.

Minerals

The area will be withdrawn from Mineral entry in the event of formal classification.

Visual

To be in line with the objective for this area; i.e., maintenance of the natural ecosystems, the visual standard is raised to Preservation.

B. ALTERNATIVES

The following discussion refers to the environmental effects of the seven alternatives. Each alternative is a composite of three or more Management Areas. Management Area combinations determine the general management direction of each alternative.

1. ALTERNATIVE 1 (Refer to Map 1)

The production of wood fiber and forage are emphasized in this alternative. All available acres except those in Management Area B and a Proposed Research Natural Area are allocated to Management Area A. Timber and forage producing acres are managed to obtain their greatest potential biological yields while considering the habitat needs of wildlife.

Alternative 1 proposes the following management combinations:

	ACRES	PERCENT OF AREA
Management Area A	106,200	97
Management Area B	1,600	2
Proposed Research Natural Area	1,200	1
TOTALS	109,000	100

Direction for each Management Area is discussed in Section IV, Management Descriptions.

Environmental Effects discussed for Management Areas A, B and the Proposed Research Natural Area remain the same. The following items refer to the environmental effects of the Alternative as a whole:

Air Quality and Noise

There will be a greater potential for degradation of air quality and more noise with this alternative than with any of the others. The amount of change in comparison to the present management would not be significant.

Soils

This alternative ranks last in potential for maintaining existing soil conditions. It has the greatest potential for soil disturbance and the chance of man caused soil losses because of the large area managed intensively for wood fiber and forage.

Water

This alternative ranks last in potential for maintaining existing water quality. Intensive management of almost all of the Unit has the greatest potential for water degradation. This alternative is expected to produce the greatest quantity of runoff. Water quality will be maintained at the AA level in the long run. However, it may occasionally fall below this for short periods of time.

Floodplains and Wetlands

The potential for activities occurring on floodplains or wetlands are greatest in this alternative because of the more extensive road system and widespread management activities.

Timber and Vegetation

This alternative is last in potential for maintaining existing vegetative cover. Intensive Wood and Forage Management will result in stands of various age classes, but no more than 130 years of age, on much of the Unit. There will be more vegetation in a transitional stage than under any other alternative. The resulting transitory range will be available to livestock and wildlife.

This alternative is first in potential timber output. Potential timber production with visual and watershed constraints will be about 14.0 MM bd. ft. with this alternative. This is about 2.0 MM bd. ft. greater than under present management. Because of watershed considerations, economics and technological lag, this potential will not be met until some future date.

Range

Implementation of this alternative will produce more potential forage than any of the other alternatives. Actual use will depend on economics and physical suitability of the range.

Wildlife and Fish Habitats

There will be increased forage available for big game. On the other hand, there may be a significant reduction in hiding cover in areas of valuable old growth timber. However, dense stands and thickets of lodgepole pine and other marginal

stands will retain their value as cover until such time as they can be marketed or managed. This alternative ranks sixth in potential for improving elk habitat.

There will be a significant reduction in old growth and solitude habitat.

Some areas of old growthi will be retained because of watershed or visual considerations. In conjunction with this reduction in old growth, there will be a decrease in the number of hard snags necessary to maintain snag dependent wildlife species. Because of the greatest potential for soil disturbance and water degradation this alternative ranks last in potential for maintaining fish habitat.

Recreation

There will be a decrease in opportunities to engage in big game hunting associated with unroaded natural appearing areas. At the same time, there will be more opportunities for dispersed roaded recreation. There may also be more elk harassment because of the more intensive road system and reduced hiding cover. Developed recreational opportunities will not change. Trail oriented off-road vehicle opportunities will increase slightly with the addition of some trail mileage and the upgrading of existing trails.

Historical, Archeological and Cultural

This alternative ranks seventh in potential for maintaining historical, archeological and cultural sites and areas in an undisturbed condition.

Undeveloped Areas

This alternative does not recommend retention of any acres to roadless management. Undeveloped areas may occur in some areas because of economic constraints. Inventoried undeveloped areas totaling 17,500 acres are allocated to Management Area A.

Visual

Visual quality objectives remain about the same as they are under the present management. The visual quality objective for the 1,200 acre Proposed Research Natural Area becomes Preservation. Visual quality objectives in Management Area A where currently classified as Retention or Partial Retention along the Pacific Crest National Scenic Trail are changed to Modification. Other classifications are the same as under existing visual objectives.

Minerals

Mining activities will be operated under existing regulations. About 1,200 acres of land in the Proposed Research Natural Area may be withdrawn from mineral entry in the event of formal classification.

Socio-Economic

There may be a slight increase in industries associated with timber and livestock. The potential for increased jobs or changes in minority, low income or rural poverty group employment will also be slight. This alternative produces the greatest economic returns for County governments.

Fire and Residue Management

This alternative has the greatest potential for providing fast initial attack on wildfires because of the required extensive road system.

Roads and Trails

Approximately 65 miles of additional system roads would be required. Cooperative road construction agreements would remain unchanged in this alternative. Roads would be constructed to the minimum standards necessary to manage the forest resources.

Trail mileage may increase slightly as connecting trails are constructed.

Land Adjustments

In the East Subunit, the goal would be to retract from the peripheral and isolated National Forest lands lying east of Wilson Creek and south of benchmark 6742. National Forest ownership within the core of the Subunit would be consolidated through acquisition of Washington State Department of Natural Resources Lands.

In the West Subunit, the goal is to obtain more efficient management.

2. ALTERNATIVE 2 (Refer to Map 2)

This alternative is oriented toward a high production of timber and livestock forage while maintaining critical elk cover and providing unroaded primitive recreational opportunities. The following management is proposed:

> The Table Mountain-Mount Lillian and Manastash Ridge Areas are managed to maintain the scenic and unroaded dispersed recreational values of these areas (see Management Area D, Section IV).

Isolated stringers and patches of timber found in generally open country are managed to maintain dense cover for elk and/or deer. Non-timber portions are managed for their forage value for livestock and game (see Management Area C, Section IV).

An area of about 1,200 acres near Taneum Lake is proposed as a Research Natural Area (see Proposed Research Natural Area, Section IV).

Critical winter elk range on each Subunit is managed to maintain optimum habitat conditions for wintering elk (see Management Area B, Section IV).

All other areas are managed intensively for wood fiber and forage production. Timber management activities are planned so as to improve wildlife habitat, Management Area A.

This Alternative provides the following management combinations:

	N.F. ACRES	PERCENT
Management Area A	65,700	60
Management Area B	1,600	2
Management Area C	19,000	17
Management Area D	21,500	20
Proposed Research Natural Area	1,200	1
TOTALS	109,000	100

Direction for each Management Area is discussed in Section IV.

Environmental Effects discussed for Management Areas A, B, C, D and the Proposed Research Natural Area remain the same. The following items refer to the environmental effects of Alternative 2 as a whole:

Air Quality and Noise

This alternative ranks first in the maintenance of air quality and potential for maintaining low noise levels. Activities that cause noise and produce smoke will be located at lower elevations or in specific areas in Management Areas A, B and C.

Soils

This alternative ranks first in its potential for maintaining existing soil conditions. Approximately 21 percent of the Unit is managed in a near natural or natural ecological conditions (Management Area D and Proposed Research Natural Area). Consequently there is less overall soil disturbance. Soil disturbing activities within Management Area A have the greatest potential of causing soil disturbance.

Water

This alternative ranks first in potential for maintenance of water quality. Approximately 60 percent of the Unit would be managed intensively for wood fiber and forage. Activities within this area may cause reductions in water quality. It ranks sixth in potential for increasing water yield. Water quality will be maintained at the AA level over the long term.

Floodplains and Wetlands

This alternative ranks first in potential for maintaining floodplains or wetlands in a natural condition.

Timber and Vegetation

Less vegetative change occurs in this alternative than with any of the others. Potential timber production ranks fourth by a slight margin.

Range

Forage production is slightly increased over existing levels, with this alternative. The alternative ranks fourth in terms of potential AUM output.

Wildlife and Fish Habitats

Under this alternative near optimum big game habitat conditions are maintained in Management Areas B and C. In Management Area A, new forage areas are developed but there may be a reduction in big game hiding cover. The alternative ranks fifth in terms of concern for optimum elk habitat.

No specific areas are managed for old growth and solitude habitat. There are approximately 1,400 acres of old growth or mature stands of timber within Management Area D and the Proposed Research Natural Area. Management in these areas favors retention of existing and formation of new old growth stands. Watershed, streamside and visual constraints will retain various stands of old growth and solitude habitat in Management Areas A and C.

This alternative provides the greatest potential for maintaining fish habitat conditions because of its potential for maintaining soil conditions and water quality.

Recreation

Developed recreation will remain at present levels. This alternative provides the most area for unroaded recreation activities. At the same time, there are increased opportunities for dispersed

roaded recreation including hunting (Management Areas A and C). Trail oriented off-road vehicle opportunities will increase slightly with the addition of some trail mileage and the upgrading of existing trails.

Historical, Archeological and Cultural

This alternative ranks first in potential for maintaining sites or areas of historical, archeological and cultural significance in an undisturbed condition.

Undeveloped Areas

This alternative does not recommend retention of any acres to roadless management, Management Area F. The 17,500 acres of undeveloped National Forest land identified in RARE II are distributed to the following management in this alternative:

	National Forest Land	
Management Area A	9,800 acres	56%
Management Area C	2,700 acres	15%
Management Area D	5,000 acres	29%
	17,500	100%

Because of the characteristics of these areas such as sparse timber, low timber productivity, and the proposed management, much of this area will remain unroaded.

Visual

Management of vegetation in Management Areas B, C, and D meets or exceeds existing visual quality objectives. The visual quality objective in the 1,200 acres Proposed Research Natural Area becomes preservation. Visual quality objectives in Management Area A remain the same as under present management with the exception of Retention and Partial Retention areas along the Pacific Crest National Scenic Trail which are changed to Modification.

Minerals

Mining activities will operate under existing regulations. About 1,200 acres of land in the Proposed Research Natural Area may be withdrawn from mineral entry in the event of formal classification.

Socio-Economic

There will be no significant change in industries associated with timber and livestock. Employment including that of minority, low income or rural poverty groups will not be much different. Monetary returns to county governments are slightly greater than under present management.

Fire and Residue Management

This alternative ranks fifth in potential for providing fast initial attack on wildfires because of a more limited road system.

Roads and Trails

An additional 49 miles of system roads would be necessary in Alternative 2. Some roads through National Forest land in Management Area D would be necessary to permit access to adjoining private lands. Such roads would be designed to have a minimum impact on the land. Their location would not be simply rerouted to circumvent Management Area D if the best location was through such areas. The Forest Service would not share in the construction cost of these roads unless they provide recreational or other management opportunities and meet the objectives of Management Area D. Whenever the Forest Service does not share in the construction cost and has no management need of a road, it could be closed to recreational vehicle traffic. Roads constructed through Management Areas A, B and C could be constructed and managed under the applicable cooperative road construction agreements. No road construction would be permitted within the Proposed Taneum Lake Research Natural Area.

A slight increase in trail mileage may occur as some new trail segments are constructed.

Land Adjustments

Land adjustment goals for the East Subunit are to retract from peripheral and isolated National Forest tracts lying east of Wilson Creek and south of benchmark 6742. National Forest ownership within the core of the East Subunit would be consolidated through acquisition of Washington State Department of Natural Resources land.

In the West Subunit the goal is to consolidate National Forest ownership in Management Area D. In other Management Areas adjustments would be made based on more efficient management.

3. ALTERNATIVE 3 (Refer to Map 3)

Wildlife habitat in the Kittitas Planning Unit is among the most important in Washington State. Not only does it help to sustain the Colockum and Taneum-Manastash elk herds but it is used by a variety of other wildlife species.

In order to maintain these values, some areas are managed with the intent of maintaining or improving critical elk habitat (Management Area C), critical winter range (Management Area B), and old growth wildlife habitat (Management Area E). Where possible, areas identified as having high risk for mass waste are

allocated to old growth habitat maintenance. The Proposed Taneum Research Natural Area is again introduced. The remaining lands are managed to obtain their greatest potential biological yields of timber and forage (Management Area A).

Alternative 3 proposes the following management scheme:

	N.F. ACRES	PERCENTAGE
Management Area A	72,600	66
Management Area B	1,600	2
Management Area C	32,000	29
Management Area E	1,600	2
Proposed Research Natural Area	1,200	1
	109,000	100

Direction for each Management Area is discussed in Section IV. Management Descriptions.

Environmental Effects discussed for Management Areas A, B, C and E and the Proposed Research Natural Area remain the same. The following items refer to the environmental effects of ALTERNATIVE 3 as a whole:

Air Quality and Noise

This alternative ranks sixth in air and noise pollution. Management activities will be widespread.

Soils

Alternative 3 ranks sixth in potential for maintaining existing soil conditions. Management activities that have potential for soil disturbance occur in Management Areas A, B, and C. An extensive transportation system will be necessary to meet the intent of management.

Water

Intensive management of most of the Unit has potential for water quality degradation. The alternative ranks sixth in water quality maintenance. It also produces the second highest volume of runoff. Water quality will be maintained at the AA level in the long run.

Floodplains and Wetlands

This alternative ranks sixth in potential for maintaining floodplains and wetlands because of the extensive management activities.

Timber and Vegetation

This alternative has the second greatest potential for vegetative disturbance.

The potential biological timber yield is 13.1 MM board feet, the second highest. This is about 1.1 MM board feet greater than under existing management. The alternative ranks second in terms of potential timber output.

Range

Implementation of this alternative would produce the second largest percentage of land in a transitory vegetative stage. Consequently, the alternative has potential for producing the second largest quantity of forage.

Wildlife and Fish Habitats

Near optimum elk habitat is maintained on 31 percent of the Unit. In Management Area A, a variety of wildlife habitat conditions result including increased forage and edge areas. Hiding cover may be inadequate in some locations, however, this alternative has the potential for increasing elk habitat approximately 30 percent over present management.

Old growth and solitude habitat results from management areas intended to disperse and perpetuate old growth throughout the Unit. Other areas of old growth occur in the Proposed Research Natural Area and areas constrained because of watershed, soils, or visual considerations. Compared to the present situation, old growth habitat is significantly decreased.

This alternative ranks first in its concern for big game habitat. It ranks sixth in potential for maintaining fish habitat because of the widespread soil disturbance potential and possibility of water degradation.

Recreation

Developed recreational opportunities will be maintained at their present level. There will be a fairly extensive road system to accommodate the management activities and less natural appearing areas. Consequently, there will be more emphasis on maintaining unroaded hunting conditions through the use of road or area closures with this alternative. In some cases, roaded dispersed recreation opportunities will increase slightly with the addition of some trail mileage and the upgrading of existing trails.

Historical, Archeological and Cultural

This alternative ranks sixth in potential for maintaining historical, archeological and cultural sites or areas in an undisturbed condition.

Undeveloped Areas

This alternative does not retain any areas for roadless management or further planning. The land occupied by the two undeveloped areas identified in RARE II would be managed as follows:

	National Forest Land	
Management Area A	12,050	69%
Management Area C	5,200	30%
Management Area E	250	1%
	17,500	100%

Some of the land in this area would remain unroaded because it is non-productive, low in timber productivity, or unsuitable for roading.

Visual

Management of vegetation in Management Areas B, C, and E meets or exceeds existing visual quality objectives. The visual quality objectives in the Proposed Natural Area is Preservation. Visual quality objectives in Management Area A remain the same as under present management with the exception of Retention and Partial Retention areas along the Pacific Crest National Scenic Trail which are changed to Modification.

Minerals

Mining activities will be operated under existing regulations. About 1,200 acres of land in the Proposed Research Natural Area may be withdrawn from mineral entry in the event of formal classification.

Socio-Economic

This alternative ranks second as it relates to increases in industries associated with timber and livestock. Potential for increased jobs or changes in minority, low income or rural poverty groups employment are minor. Potential dollar returns to the local Counties from timber and grazing receipts rank second.

Fire and Residue Management

This alternative has the potential of providing the second fastest capability for initial attack on wildfires because of an extensive road system.

Roads and Trails

A need for an additional 57 miles of system roads is projected in this alternative. Cooperative road construction agreements would

remain basically unchanged in the West Subunit. Roads would be constructed to the minimum standard necessary to manage the forest resources.

Seasonal area closures may be necessary in Management Areas B and C to protect deer fawning and elk calving areas. No roads would be allowed in the Proposed Research Natural Area.

Trail mileage may increase as new trail segments are constructed.

Land Adjustments

Land adjustment goals in the East Subunit are to retract from the peripheral and isolated National Forest tracts lying east of Wilson Creek and south of benchmark 6742. National Forest ownership within the core of the Subunit would be consolidated through acquisition of Washington State Department of Natural Resources lands.

In the West Subunit the goal is to obtain more efficient management through land adjustments.

4. ALTERNATIVE 4 (Refer to Map 4)

This alternative provides a mix that considers wildlife and recreation as well as commodity production. Specific areas are managed to maintain old growth wildlife habitat. Management Area D, in the West Subunit is reduced in size to encompass an area in which National Forest ownership is consolidated.

The following mix of Management Areas is proposed:

	ACRES	PERCENTAGE
Management Area A	64,300	59
Management Area B	1,600	2
Management Area C	23,700	21
Management Area D	16,600	15
Management Area E	1,600	2
Proposed Research Natural Area	1,200	1
TOTAL	109,000	100

Direction for each Management Area is discussed in Section IV.

Environmental effects discussed previously for Management Areas A, B, C, D and E and the Proposed Research Natural Area remain the same. The following items refer to the environmental effects of Alternative 4 as a whole:

Air Quality and Noise

This alternative ranks fourth in the maintenance of air quality and the potential for maintaining low noise levels. Activities that cause noise and produce smoke or dust will be confined to specific areas.

Soils

Approximately 18 percent of the Unit is managed in a near natural or natural ecological condition (Management Areas D and E and a Proposed Research Natural Area). The alternative ranks fourth in maintenance of existing soil conditions. Soil disturbing activities will occur primarily in Management Area A, but also in Management Areas B and C.

Water

This alternative has the fourth greatest potential for maintaining water quality. Approximately 59 percent of the Unit will be managed intensively for wood fiber and forage. Activities within this area may cause reductions in water quality. This alternative ranks fourth in potential runoff volume. Management Area E limits management activities in some areas having high watershed risk. Water quality will be maintained at the AA level in the long run.

Floodplains and Wetlands

This alternative ranks fourth in potential for maintaining floodplains and wetlands.

Timber and Vegetation

This alternative ranks fourth in the maintenance of existing vegetation. More acres are allocated to management oriented toward wildlife habitat maintenance and improvement than to dispersed unroaded recreation. Vegetative changes are more likely to occur in Management Area C than in D.

Potential timber production will be about 12.1 MM board feet. The alternative ranks fifth in timber output. This is slightly greater than in Alternative 6.

Range

This alternative ranks next to last with Alternative 6 in potential for producing forage. About 18 percent of the Unit has little or no potential for additional transitory range. Another 21 percent has limited potential for change.

Wildlife and Fish Habitat

Near optimum big game habitat conditions occur in Management Areas B, C and D. New forage areas will develop in Management Area A but hiding cover may be inadequate in some locations. This alternative ranks third in elk habitat considerations.

This alternative identifies areas of old growth wildlife habitat, Management Area E. These areas are dispersed throughout the Unit. Other areas containing old growth wildlife habitat occur in Management Area D, the Proposed Research Natural Area, and in areas where management activities are subdued by visual and watershed considerations. This alternative ranks fourth in potential for maintaining existing fish habitat because of potential for maintaining soil conditions and water quality.

Recreation

Developed recreation will stay at the present level. This alternative has the third largest area that is managed for dispersed unroaded recreation. It provides a high level of dispersed roaded recreation in Management Areas A and C. Trail oriented off-road vehicle opportunities will increase slightly with the addition of some trail mileage and the upgrading of existing trails.

Historical, Archeological and Cultural

This alternative is fourth in potential for maintaining these types of sites or areas.

Undeveloped Areas

This alternative recommends management of the 17,500 acres of undeveloped National Forest land identified in RARE II as follows:

	National Forest Land	
Management Area A	9,600	55%
Management Area C	2,700	15%
Management Area D	4,950	29%
Management Area E	250	1%
	17,500	100%

Visual

Management Areas B, C, D and E meet or exceed existing visual quality objectives. The visual quality objective of the 1,200 acre Proposed Research Natural Area is Preservation. Visual quality objectives in Management Area A remain unchanged except for Retention and Partial Retention areas along the Pacific Crest National Scenic Trail which are changed to Modification.

Minerals

Mining activities will operate under existing regulations. About 1,200 acres of land in the Proposed Research Natural Area may be withdrawn from mineral entry in the event of formal classification.

Socio-Economic

There will be no significant change in industries associated with timber and livestock. Employment including that of minority, low income, or rural poverty groups will remain unchanged. Monetary returns to County governments are slightly greater than under present management.

Fire and Residue Management

This alternative ranks third in potential for providing fast initial attack on wildfires.

Roads and Trails

Fifty-two miles of additional system roads are required in Alternative 4. Some roads through National Forest land in Management Area D would be necessary to permit access to adjoining private lands. Such roads would be designed to have a minimum impact on the land. Their location would not be simply rerouted to circumvent Management Area D if the best location was through such areas.

The Forest Service would not share in the construction cost of these roads unless they provide recreational or other management opportunities and meet the objective of Management Area D. Whenever the Forest Service does not share in the construction cost and has no management need of a road, it could be closed to recreational vehicle traffic. In the West Subunit, roads constructed through Management Areas A, B, and C would be located and constructed under the applicable cooperative road construction agreement. Management of roads in Management Area C may include seasonal closures to provide unroaded hunting. No roads would be allowed in the Proposed Research Natural Area.

A slight increase in trail mileage is anticipated as new trail segments are constructed.

Land Adjustments

The land adjustment goal for the East Subunit is to retract from the peripheral and isolated National Forest tracts lying east of Wilson Creek and south of Bench Mark 6742. National Forest ownership within the core of the Subunit would be consolidated through acquisition of Washington State Department of Natural Resources land.

In the West Subunit the goal is to consolidate National Forest ownership in Management Area D and adjust ownership in other areas to obtain more efficient management.

5. ALTERNATIVE 5 (Refer to Map 5)

This alternative is an amenity and wildlife habitat oriented alternative. It proposes the same management for the West Subunit that is depicted in Alternative 3. In the East Subunit, the two undeveloped areas identified in RARE II are designated for further planning. All other areas in the East Subunit are managed the same as in Alternative 3. It proposes the following management:

	N.F. ACRES	PERCENT
Management Area A	60,500	55
Management Area B	1,600	2
Management Area C	26,900	25
Management Area E	1,300	1
Management Area F	17,500	15
Proposed Research Natural Area	1,200	1
TOTALS	109,000	100

Direction for each Management Area is discussed in Section IV.

Environmental Effects discussed for Management Areas A, B, C, E and F and the Proposed Research Natural Area remain the same. The following items refer to the environmental effects of Alternative 5 as a whole:

Air Quality and Noise

This alternative ranks third in the maintenance of air quality and the potential for maintaining low noise levels. Activities that cause noise and produce smoke or dust will be primarily confined to the West Subunit. Approximately 36 percent of the East Subunit is managed in a near natural condition, Management Area F.

Soils

This alternative ranks third in potential for maintaining existing soil conditions. Soil disturbing activities will occur primarily in Management Area A. Seventeen percent of the Unit is managed in a near natural condition (Management Areas E, F and a Proposed Research Natural Area). Soil disturbance frequently occurs in Management Areas B and C because of efforts to improve wildlife habitat.

Water

Intensive management of most of the Unit has potential for water quality degradation. This alternative ranks third in water quality maintenance. It produces the third greatest water yield. Water quality will be maintained at the AA level over the long term.

Floodplains and Wetlands

This alternative ranks third in potential for maintaining existing floodplains and wetlands.

Timber and Vegetation

This alternative ranks third in maintenance of existing vegetation. Management Areas E and F and the Proposed Research Natural Area are managed in a near natural condition. Eighty-two percent of the Unit is subject to man caused vegetative disturbance.

The potential biological timber yield will be 11.9 million board feet. Potential annual yields of 1.5 million board feet of timber in Management Area F and 0.2 million board feet in the Proposed Research Natural Area are unavailable. This alternative ranks last in its potential for timber production.

Range

This alternative ranks last in its potential for increasing forage because of the reduced transitory range. In Management Area F range use will continue at existing levels.

Wildlife and Fish Habitats

Near optimum elk habitat is maintained on 27 percent of the Unit. In Management Area A, a variety of wildlife habitat conditions result including increased forage and edge areas. Hiding cover may be inadequate in some areas. This alternative has the potential for sustaining the second greatest elk population.

Planned areas of old growth and solitude habitat occur in Management Area E. Other areas of old growth occur in the Proposed Research Natural Area and Management Area F. Watershed, soil and visual considerations provide additional areas of old growth habitat.

This alternative ranks second in its concern for improving big game habitat. It ranks third in potential for maintaining fish habitat.

Recreation

Developed recreation will be maintained at its present level. The West Subunit will have a fairly extensive road system. Roaded dispersed recreation opportunities will increase in this Subunit.

In the East Subunit, 36 percent of the area will be managed in an undeveloped condition. Existing recreational activities including motorized use continues at about the same level as present. This alternative offers the greatest opportunity for a fairly extensive area suitable for unroaded recreation. Dispersed use is maintained at approximately the existing level. Trail oriented ORV opportunities are constructed and existing trails are upgraded. In the East Subunit ORV use would be maintained at present levels until a final recommendation is made on the further planning areas. The results of this study could result in a reduction in ORV opportunities in that area.

Historical, Archeological and Cultural

This alternative ranks third in potential for maintaining historical, archeological and cultural sites and areas.

Undeveloped Areas

This alternative retains the two undeveloped areas identified in RARE II for roadless management. Management direction is specified in Section IV, Management Area F.

Visual

Direction in Management Areas B, C and E meet or exceed existing visual quality objectives. The visual classification for Management Area F becomes Preservation. Visual quality objectives in Management Area A remain the same as existing standards with the exception of Retention and Partial Retention areas along the Cascade Crest National Scenic Trail which are changed to Modification. The visual quality objective of the Proposed Research Natural Area is Preservation.

Minerals

Mining activities will be operated under existing regulations. In the event of formal classification about 1,200 acres in the Proposed Research Natural Area and 17,500 acres in Management Area F would be withdrawn from mineral entry.

Socio-Economic

This alternative ranks last in potential for increases in industries associated with timber and livestock; potential for increasing jobs or changes in minority, low income, or rural poverty group employment and returns to County governments.

Fire and Residue Management

This alternative ranks last in potential for providing fast initial attack on wildfires because of the reduced road system.

Roads and Trails

A need for approximately 36 more miles of system roads is projected in this alternative. Most of these are in the West Subunit. Roads constructed through Management Areas A, B, and C would be located and constructed under the applicable cooperative road construction agreements in the West Subunit. Management of roads in Management Area C may include seasonal closures to provide unroaded hunting. No roads would be allowed in the proposed Research Natural Area.

A slight increase in trail mileage is anticipated as new trail segments are constructed.

6. ALTERNATIVE 6 (Refer to Map 6)

This alternative represents the present management situation (no change in present management). Management guidelines were established in the 1971 District Multiple-Use Plans. Almost all of the National Forest land in the Unit is managed for commodity production (General Forest). This alternative proposes the following management pending completion of RARE II:

	N.F. ACRES	PERCENT
General Forest	90,300	83
RARE II Undeveloped Areas	17,500	16
Proposed Research Natural Area	1,200	1
	109,000	100

The management direction for those acreages identified in RARE II was determined through the RARE II process. This involved three possible allocations: 1) recommendation for immediate wilderness designation, 2) further planning, and 3) allocation to other uses. Section II-C-13 provides a discussion of the RARE II process.

Environmental Effects discussed for the Proposed Research Natural Area remain the same. The following items refer to the environmental effects of Alternative 6 as a whole:

Air Quality and Noise

This alternative ranks fifth in the maintenance of air quality and the potential for maintaining low noise levels. Activities that cause noise and produce smoke or dust will primarily occur on the West Subunit.

Soils

Man caused soil disturbances could occur almost anywhere within the 83 percent of the Unit classed as General Forest. Soil, watershed, and visual considerations will limit the area subject to disturbance. This alternative ranks fifth in potential for maintenance of existing soil conditions.

Water

Intensive management of most of the Unit for commodity production could cause water degradation. The alternative ranks fifth in maintenance of water quality. It produces the least yield of water based on the present situation. Water quality is maintained at the AA level except for short periods of time.

Floodplains and Wetlands

This alternative ranks fifth in potential for maintaining floodplains and wetlands in a natural condition.

Timber and Vegetation

This alternative ranks fifth in maintenance of existing vegetation. The Proposed Research Natural Area and RARE II Undeveloped Areas are managed in a near natural condition. Vegetative disturbance may occur within 83 percent of the Unit. Most of the old growth stands would eventually be harvested.

With present day visual and stream management considerations the calculated net yield for this alternative is 12.0 million board feet per year. This includes the volume within the RARE II Areas. When the potential yield from these areas is excluded, the yield for the Planning Unit becomes 11.4 million board feet.

Range

This alternative ranks sixth in potential for producing forage. Future grazing potential is anticipated to remain unchanged.

Wildlife and Fish Habitats

New forage areas will be created in harvest areas. Any improvements in wildlife habitat are incidental to timber management activities that occur. Hiding cover may or may not be adequate. This alternative ranks last in potential for sustaining optimum elk habitat.

An area of old growth and solitude habitat is maintained in the Proposed Research Natural Area. Other areas are temporarily

maintained in the RARE II Undeveloped Areas. Watershed, soils and visual considerations provide additional old growth habitat. This alternative ranks last in its concern for wildlife habitat improvement or maintenance. Potential for maintenance of fish habitat ranks fifth.

Historical, Archeological and Cultural

This alternative ranks fifth in potential for maintaining historical, archeological and cultural sites or areas in an undisturbed condition.

Recreation

Developed recreation will be maintained at its present level. Dispersed roaded recreation will increase as roads are extended or constructed into undeveloped areas.

Unroaded dispersed recreational opportunities are temporarily maintained in the more remote areas of the Unit. Eventually, many of these areas will disappear as access roads are constructed. Road closures may be necessary to provide unroaded hunting conditions.

Trail oriented ORV opportunities in the West Subunit would increase slightly with the addition of some new trails and the upgrading of existing trails. In the East Subunit ORV opportunities would remain approximately at the present level. In the RARE II Undeveloped Areas, ORV opportunities could increase by constructing new ORV routes in areas now allocated to multiple use.

Undeveloped Areas

RARE II resulted in the allocation of the two undeveloped areas to non-wilderness use.

Visual

This alternative maintains the existing visual management objectives for the Unit. Some adjustments may occasionally be necessary to reflect changing conditions such as new recreation oriented raods, trails or areas.

Minerals

Mining activities will be operated under existing regulations. In the event of formal classification, about 1,200 acres in the Proposed Research Natural Area would be withdrawn from mineral entry.

Socio-Economic

This alternative ranks sixth in potential for increases in industries associated with timber and livestock; potential for increasing jobs or changes in minority, low income, or rural poverty group employment and returns to County governments.

Fire and Residue Management

This alternative ranks sixth in the potential for fast initial attack on wildfires.

Roads and Trails

A need for approximately 49 additional miles of system roads is projected for this alternative. There would be no change in the construction standards and management of future share cost agreement roads. No road construction would be permitted in the Proposed Research Natural Area.

Trail mileage would increase slightly as some new trail segments are constructed.

Land Adjustments

The goal of land ownership adjustment is to gain more efficient management through exchange, retraction or acquisition. The preliminary agreements listed in Section II-B-4, Page 13, are in harmony with this goal.

PREFERRED ALTERNATIVE

7. ALTERNATIVE 7 (Refer to Map 7)

This alternative is a refinement of Alternative 2. Changes were made in the boundaries of Management Areas A, B, C and D in Alternative 2 so that they more closely follow natural features, recognize the impacts of past activities and acknowledge the capabilities or limitations of the land to respond to the proposed management. This alternative provides a balanced management mix to attain a high level of wood fiber and forage production while maintaining critical big game cover and lands having high quality for dispersed recreation in a natural appearing environment. The Proposed Research Natural Area allocation is dropped in this alternative. The alternative proposes the following management:

	National Forest Acres	Percent
Management Area A	66,160	60
Management Area B	800	1
Management Area C	21,360	20
Management Area D	20,680	19
TOTALS	109,000	100

Direction for each Management Area is discussed in Section IV, ALTERNATIVES CONSIDERED.

Environmental effects discussed for Management Areas A, B, C and D remain the same. The following items refer to the environmental effects of Alternative 7 as a whole.

Air Quality and Noise

This alternative ranks second in the maintenance of air quality and potential for maintaining low noise levels. Activities that cause noise and produce smoke will be located at lower elevations or in specific portions of Management Areas A, B and C.

Soils

This alternative ranks second in its potential for maintaining existing soil conditions. Approximately 19 percent of the Unit is managed in a near natural ecological condition (Management Area D). Management activities within Management Area A have the greatest potential for causing soil disturbance.

Water

This alternative ranks second in potential for maintenance of water quality and fifth in potential for increasing water yields. Water quality will be maintained at the AA level over the long run. Approximately 61 percent of the Unit would be managed intensively for wood fiber and forage production.

Floodplains and Wetlands

This alternative ranks second in potential for maintaining floodplains and wetlands in a natural condition.

Timber and Vegetation

Potential timber production ranks third. With an estimated output of 12.4 MM board feet per year. Very little vegetative change will occur in Management Area D, which includes 19 percent of the area. This alternative ranks second in maintenance of existing vegetation.

Range

Forage production is slightly increased over the existing level, with this alternative. Potential forage output ranks third.

Wildlife and Fish Habitats

Under this alternative near optimum big game habitat conditions are maintained in Management Areas B and C. Management Area A

provides additional forage areas but there may be an overall reduction in big game hiding cover. This alternative ranks fourth in terms of big game habitat maintenance.

No specific areas are managed for old growth habitat. There are approximately 1,000 acres of old growth or mature stands of timber in Management Area D. Management in this area favors retention of existing and formation of new old growth stands. Watershed, streamside and visual considerations will retain various stands of old growth habitat in Management Areas A and C. This alternative ranks second in potential for maintaining fish habitat conditions.

Recreation

Developed recreation will remain at the present level in the near future. This alternative provides the second highest amount of area for dispersed recreation in a natural appearing environment. There will also be more opportunities for road oriented recreation including hunting--primarily in Management Areas A and C. Off-road vehicle opportunities will increase slightly with the upgrading or addition of new trails or routes.

Historical, Archeological and Cultural

This alternative is second in potential for maintaining historical, archeological and cultural sites or areas in an undisturbed condition.

Undeveloped Areas

This alternative does not recommend retention of any acres to roadless Management, Area F. The 17,500 acres of undeveloped National Forest land identified in RARE II are distributed to the following management in this alternative:

	National Forest Land	
Management Area A	9,605 Acres	55%
Management Area C	3,450 Acres	20%
Management Area D	4,445 Acres	25%
TOTALS	17,500	100

Because of the characteristics of these areas such as sparse timber, low timber productivity, and the proposed management of the area much of it will remain unroaded.

The Proposed Research Natural Area allocation at Taneum Lake is dropped from this alternative because of the Research Area Committee's recommendation.

Visual

Management of vegetation in Management Areas B and C meet or exceeds existing visual quality objectives. Visual quality objectives in Management Area D meet or exceed the standard for Partial Retention.

Area A remains the same as under present management with the exception of Retention and Partial Retention areas along the Pacific Crest National Scenic Trail which are changed to Modification.

Minerals

Mining activities will operate under existing regulations.

Socio-Economic

There will be no significant change in industries associated with timber and livestock. Minority and other employment including low income and rural poverty groups will not be changed very much. Monetary returns to County governments are slightly greater than under present management. The alternative ranks third in terms of potential returns to the local Counties from timber and grazing receipts.

Fire and Residue Management

This alternative ranks fourth in potential for providing fast initial attack on wildfires because of the reduced road system (Management Area D).

Roads and Trails

An estimated additional 51 miles of system roads would be necessary in Alternative 7. Some roads through National Forest land in Management Area D would be necessary to permit access to adjoining private lands. Such roads would be designed to have a minimum impact on the land. Their location would not be simply rerouted to circumvent Management Area D if the best location was through such areas. The Forest Service would not share in the construction cost of these roads unless they provide recreational or other management opportunities and meet the objectives of Management Area D. Whenever the Forest Service does not share in the construction cost and has no management need of a road, it could be closed to recreational vehicle traffic. Roads constructed through Management Areas A, B, and C could be constructed and managed under the applicable cooperative road construction agreement.

A slight increase in trail mileage may occur as new trail segments are constructed to connect existing trails or replace some existing trails.

Land Adjustments

The land adjustment goal for the East Subunit is to retract from peripheral and isolated National Forest tracts lying east of Wilson Creek and south of benchmark 6742. National Forest ownership within the core of the Subunit would be consolidated through acquisition of Washington State Department of Natural Resources land. In the West Subunit the goal is to consolidate National Forest ownership in Management Area D. In other Management Areas adjustments would be made based on more efficient management.

C. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The magnitude of probable adverse environmental effects will vary directly with the kind and intensity of management activity being proposed. To some degree, all alternatives will produce adverse environmental effects. The following effects apply to all alternatives.

Noise, dust, smoke and emissions from management activities will pollute the air and environment with all alternatives. Development activities such as road construction, timber harvesting and slash burning will be the main cause of these effects. The effects will tend to be temporary and of short duration. The impacts on forest visitors and wildlife will depend upon their proximity to the activity. The effects will tend to be very minor or nearly unnoticeable inside Management Areas proposed for a low level of management activity.

Intensive timber management practices will cause a reduction in old growth habitat on which some species of wildlife are dependent. On the other hand, areas where harvesting is excluded or minimized will not produce the diversity in vegetation types desired by many other species of wildlife. Increased roading will raise the likelihood that wildlife will be harrassed. This effect can be minimized where necessary with seasonal restrictions or area closures.

Permanent road construction will reduce the productive land base available for timber production.

The allocation of the Roadless Areas to uses other than wilderness and the subsequent entry of these areas with management activities that change wilderness characteristics, will reduce the land base available for wilderness use in the future.

Water quality may be adversely affected by intensive management activities or concentration of people, domestic animals or wildlife in riparian areas. These effects are predicted to be within acceptable levels and should be localized and temporary in nature. Water quality will be maintained at the AA level over the long run.

Some soil degradation will occur through management activities that cause compaction, displace or destroy protecting surface biomass and litter, or disturb the soil itself. Domestic grazing, timber harvest, road construction, concentrated camping or trail use, site preparation, etc., all have the potential to cause soil damage.

From an economic standpoint, restricting full timber yield on commercial forest land reduces employment in timber related industries and lowers income to County budgets and the Federal treasury.

Construction of roads and timber harvesting will change the visual character of the landscape to varying degrees. To some who desire a natural appearing landscape, this will be an adverse effect.

Intensive management activities will increase the likelihood that unknown historical or archeological resources are disturbed before discovery is made.

D. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY.

The following relationships refer to all alternatives. Long-term productivity means the continued ability of the land to produce commodity and amenity values for future generations. This capability remains intact if soil productivity is not impaired and land and water communities and the physical character of the landscape are not impaired or altered beyond a short-term recovery period.

Effects of short-term uses on the various resources were discussed for the seven alternatives. The effects of these on the maintenance of long-term productivity is expected to be as follows:

Road construction to facilitate principal activities such as timber harvesting may reduce the productivity of the land occupied by these roads to produce vegetation.

Most of the soils occurring in the Kittitas Planning Unit are not highly productive. More importantly, many of them are very susceptible to damage that can reduce their level of productivity. Maintenance of soil productivity is a major consideration when initiating any soil disturbing activity on the Unit.

Some temporary soil losses can be expected in areas subjected to soil disturbing activities. Proper location, design and construction of roads, bridges and other facilities and utilization of proper management and harvest techniques can hold soil losses within acceptable limits.

Short-term reductions in water quality may occur in some location and at certain times. Resource management options are deferred in some areas and watersheds in an effort to maintain soil stability, hydrological balance and water quality. None of the alternatives considered will adversely affect the long-term quality of water or fisheries resources or instream flows for fish in the Yakima River System. All alternatives utilize water quality monitoring programs to detect pollution sources. The long-term water quality of the streams on the Unit will be maintained at the AA level.

Timber productivity may increase as overmature decadent stands are replaced by young vigorous stands. The long-term effect will be an increase in potential annual yield from the managed stands. In areas managed in a natural or near natural condition, all or a portion of the timber productivity is foregone for long-term maintenance of existing ecological systems.

As old growth decadent timber stands are harvested there will be a reduction in old growth and solitude habitat for those wildlife species dependent upon it. In Alternatives 1, 2, 6 and 7 the maintenance of old growth and solitude habitat would be less than in those where such habitat is managed. Management of old growth habitat contributes to the diversity of wildlife habitat but reduces timber harvesting potential in the long run.

In all alternatives there will be some changes in wildlife habitat. Some species may be temporarily displaced while other species may find more favorable short-term habitat conditions. Alternatives 2, 3, 4, 5 and 7 provide significant long-term improvements in elk habitat.

All alternatives reduce the potential for unroaded dispersed recreation while increasing opportunities for dispersed roaded recreation. The unroaded character of two identified undeveloped areas is altered in four of the alternatives to produce long-term outputs of wood fiber, forage and wildlife habitat.

All of the alternatives provide various levels of non-declining yields of timber and forage in those areas managed for timber and forage production.

E. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

For definition purposes, an irreversible commitment of resources can be defined as a situation in which certain resources are lost to society within the foreseeable future. The opportunity to restore such resources is negligible or non-existent for all practical purposes. An irretrievable commitment of resources also produces a loss but under conditions that permit restoration or replacement of the resource in the future. The following discussions refer to all alternatives.

The allocation of the Roadless Areas to uses other than wilderness would constitute an irreversible loss. Congress retains the authority to reclassify these areas as wilderness at some later date, but the development of these areas through timber harvesting, road construction, and other intensive management activities would change their wilderness character.

Use of mineral resources and road rock would result in an irreversible commitment of resources.

Energy expended in carrying out these management activities would be an irreversible loss.

Any soil loss in the affected area is irreversible. Even under the most carefully controlled conditions, management activities will result in some soil disturbance. Once this soil is eroded by wind or water it requires geologic processes to restore.

The destruction or damage of historic or cultural resources would be an irreversible loss. All alternatives specifically provide for protecting such resources. However, some of these resources may not have been discovered yet. If management activities were to disturb them before their significance was known, the damage probably could not be reversed. The possibility for this to happen is greatest in alternatives that provide for the highest level of timber production and road construction.

All alternatives include considerations that irretrievably affect potential timber, water, and forage yields. Such considerations required for the protection of other resources such as floodplains, wetlands, wildlife habitat, water quality, recreation and visual values prevent the full attainment of wood fiber, water yield and forage production. Although full timber yield may be obtainable through new technology at some time in the future, the interim loss is irretrievable.

The loss of old growth timber habitat for some forms of wildlife is irretrievable. It would take 200 or more years to replace old growth once it is cut.

Intensive management activities could result in an irretrievable loss of the natural character of the landscape. It would take several decades to restore the natural appearance once it was changed.

Activities in slash disposal, timber harvest, reforestation, and recreation site improvement will result in an irretrievable loss of habitat for some species of wildlife.

Loss of economic benefits, such as jobs and income, are irretrievably lost under land management allocations which forego full timber production.

VI. EVALUATION OF ALTERNATIVES

The seven alternatives presented have many similarities as discussed in the preceding section. Table 1 on the following pages compares the alternatives with respect to the evaluation criteria listed in Section III. Table 2 summarizes the outputs and opportunity potentials of the seven alternatives. Tables 3 through 10 provide more detailed summaries of outputs for the alternatives by resources.

TABLE 1

ESTIMATED CAPABILITY OF ALTERNATIVES TO SATISFY KITTITAS PLANNING GOALS

PLANNING GOAL	ALTERNATIVE 1	2	3	4	5	(Existing) 6	(Preferred) 7
Diversify and enhance existing habitat to sustain or improve habitat for game and non-game species.	Does Not Meet Goal. Most of the Planning Unit (97%) is allocated to Management Area A where intensive timber management practices will predominate. Although this will produce vegetative variety in mostly younger age classes and an increased amount of forage for big game, several adverse effects will also occur. Old growth habitat except in special visual and streamside areas will be severely reduced. Big game may find inadequate cover and be increasingly harrassed. Snag dependent wildlife will experience a much reduced amount of habitat. The chance of disturbance of rare and endangered species will increase. Except for the proposed Research Natural Area no large areas of seclusion are provided by the Alternative. The alternative sets aside a elk winter range area but does not allocate any specific areas to quality elk habitat, old growth, or to be maintained	Meets Goal. This Alternative will provide a wide range of vegetative conditions and will serve to enhance the habitat for both game and non-game species as well as threatened or endangered species that are found to exist on the Planning Unit. Management Area A (60% of Unit) will increase vegetative variety and forage production. Management Area B will provide elk winter range management. About 19,000 acres in Management Area C will be managed to provide ideal elk cover/forage relationships. Management Area D will provide large areas of seclusion, and additional snag and old growth habitat. As with Alternative 1, the proposed Research Natural Area will supplement snag habitat, provide areas of seclusion and furnish some additional old growth habitat. Although different wildlife species will be benefitted by different management strategies, the overall effect of this alternative will	Meets Goal. This Alternative is similar to Alternative 2 except that more acres are allocated to maintaining ideal cover/forage conditions for elk in Management Area C and no allocation is made to Management Area D. A special allocation is made to Management Area E to preserve additional areas of old growth habitat. Although the Alternative does not allocate significant acreages to be managed in a near natural setting, the overall effect of the Alternative will be to enhance wildlife habitat conditions particularly for elk.	Meets Goal. A particularly wide range of habitat conditions will evolve under this Alternative. It is similar to Alternative 2 except that an allocation to Management Area E is made to provide additional old growth habitat. Management Areas D, E, and the proposed RNA will provide 100% of the snag habitat required by snag dependent species, substantial areas of old growth, and large opportunities for solitude. These areas will also reduce the chance of disturbance of rare and endangered species. Intensive management in Management Area A will provide a variety of habitat conditions, increase edge effect, and increase forage for big game. Some reduction in cover may also result in Management Area A. This Alternative will not benefit elk to the extent as Alternative 3, but will enhance conditions for a more diverse range of wildlife species.	Meets Goal. This Alternative will provide substantially the same benefits as Alternative 4. It allocates 17,500 acres in the two RARE II Roadless Areas to further wilderness study. These areas will provide essentially the same wildlife habitat benefits as Management Area D.	Does Not Meet Goal. Existing management would result in up to 83% of the Planning Unit being managed intensively for timber. Except for a small allocation to the proposed Research Natural Area and maintence of the RARE II areas in a roadless status until the RARE II process determines their management direction, intensive timber production would predominate. The adverse effect to wildlife habitat mentioned under Alternative 1 would also apply in this case.	Meets Goal. This alternative is similar to alternative 2 of the Draft Environmental Statement with minor boundary adjustments that should improve habitat conditions for game and non-game animals as well as threatened and endangered species. Management Area A (61% of Unit) will provide the greatest vegetative variety through intensive timber management activities. Although somewhat reduced in size from Alternative 2, Management Area B still delineates the most important big game winter range areas. Areas dropped from Management Area B consist of heavily timbered north slopes with little available or potential winter forage. Management Area C is similar to the same allocation in Alternative 2 with some redefinement of boundaries to include areas important for calving, escape cover and forage. The modified boundaries will also blend better with existing management on adjacent State Game lands in the East Subunit. As with Alternative 2, substantial areas are allocated to Management Area D. The near natural appearing objective of this allocation will provide substantial areas of seclusion and old growth habitat. The alternative does not include any specific allocation to

PLANNING GOAL	ALTERNATIVE 1	2	3	4	5	(Existing) 6	(Preferred) 7
	in a relatively natural setting. In the long run this Alternative would not sustain the quality of wildlife habitat conditions that now exist on the Planning Unit.	substantially improve conditions for wildlife on the Planning Unit.					Management Area E (old growth) or the proposed Research Natural Area. However, the benefits that would accrue to wildlife from such allocations can be found in the other Management Areas. The overall effect of Alternative 7 will be to substantially improve conditions for wildlife on the Planning Unit.
Manipulate elk habitat to sustain a balanced mix of forage and cover needs with more emphasis on providing opportunities for unroaded hunting experience.	Generally Fails to Meet Goal. No specific allocation for maintenance of optimum elk cover requirements or for unroaded hunting experience. Most of the area would eventually be roaded. Small allocation (1,600 acres) to elk winter range. Elk numbers expected to be approximately the same as at present.	Exceeds Goal. About 19,000 acres (17% of area) managed specifically for optimum elk habitat and unroaded hunting experience (Management Area C). Management Area D (21,500 acres) provides approximately the same benefits. Small allocation (1,600 acres) to elk winter range. Improved habitat conditions are estimated as being capable of supporting 19% more elk under this Alternative.	Exceeds Goal. About 32,000 acres (29% of area) managed specifically for optimum elk habitat and unroaded hunting experience. (Management Area C). No specific dispersed recreation allocation (Management Area D). Small allocation (1,600 acres) to elk winter range. This Alternative is estimated of being capable of supporting a 31% increase in elk numbers over existing levels.	Exceeds Goal. About 23,700 acres (22% of area) managed specifically for optimum elk habitat and unroaded hunting experience. (Management Area C). Management Area D (16,600 acres) provides approximately the same benefits. Small allocation (1,600 acres) to critical elk winter range. A possible 23% increase in elk numbers is estimated under this Alternative.	Exceeds Goal. About 26,900 acres (25% of area) managed specifically for optimum elk habitat and unroaded hunting experience. (Management Area C). Management Area F (RARE II Roadless Areas--17,500 acres) will receive further wilderness study but will provide many of the same benefits as Management Area C for time being. Small allocation (1,600 acres) to elk winter range. Improved habitat conditions are estimated as being capable of supporting 26% more elk under this Alternative.	Fails To Meet Goal. No specific allocation to provide optimum elk habitat or unroaded hunting experience. As "General Forest" areas are developed cover/forage relationships will be impacted and opportunities for unroaded hunting experiences will be reduced. Roadless areas provide some unroaded hunting experiences for time being. No specific allocation to elk winter range.	Exceeds Goal. About 21,400 acres (20% of area) managed specifically for optimum elk habitat and unroaded hunting experience (Management Area C). Management Area D will provide many of the same benefits in its 20,700 acre allocation. The most important big game winter range areas are managed for that purpose in Management Area B. This alternative is estimated as being capable of sustaining 20% more elk than presently reside on the Planning Unit. However, as with all alternatives the actual population levels will be most dependent on State Game policies and the management of critical winter range areas off the Planning Unit. Overall, the alternative will significantly improve cover/forage relationships for elk and provide more opportunities for an unroaded hunting experience.
Intensify range management to improve forage and provide more opportunity for livestock grazing,	Meets Goal. AUM production predicted to increase by 14% due primarily to increase in transitory range.	Meets Goal. To a limited degree, AUM production estimated to increase by about one percent.	Meets Goal. AUM production estimated to increase by about 8%.	Fails To Meet Goal. AUM production increase insignificant. Output nearly the same as under existing management.	Fails To Meet Goal. AUM production estimated to decrease by 3%. Possibility of some transitory range increase in future depending on final allocation of Management Area F (RARE II Roadless Areas--17,500 acres), through wilderness study.	Fails To Meet Goal. Existing situation does not provide increase in intensity of management or AUM output. Roadless areas may provide increased transitory range opportunity after decision on land allocation is made.	Meets Goal. AUM production estimated to increase by about 3%.

PLANNING GOAL	ALTERNATIVE 1	2	3	4	5	(Existing) 6	(Preferred) 7
Optimize timber production based on site potential.	Meets Goal. Timber yield under this Alternative is estimated at 14.0 MM board feet per year or about 2.0 MM board feet more than the existing level with the same constraints. Mean annual increment for the intensively managed areas (Management Area A) is approximately 140 board feet per acre per year indicating a high proportion of low productivity acres devoted to timber production.	Meets Goal. Timber yield estimated at 12.2 MM board feet per year, slightly more than existing levels with the same streamside and visual constraints. Mean annual increment for Management Area A increases to about 166 board feet per acre per year.	Meets Goal. Timber yield estimated at 13.1 MM board feet per year. Average output of acres in Management Area A estimated at about 156 board feet per acre per year.	Meets Goal. Timber yield estimated at 12.1 MM board feet per year. Average output of acres in Management Area A estimated at about 159 board feet per acre per year.	Does Not Meet Goal. Timber yield estimated at 11.9 MM board feet per year, slightly less than existing management with the same constraints. This Alternative maximizes mean annual increment from Management Area A at about 169 board feet per acre per year. Annual yield may increase in future depending on eventual allocation of RARE II Roadless Areas.	Annual timber yield estimated at 13.2 MM with RARE II Roadless Areas. Annual yield drops to 12.0 MM when present day visual and streamside constraints are applied and to 11.4 MM when Roadless Area yields are also deducted. Timber yield per acre per year is quite low (126 board feet) indicating a large portion of low productivity acres allocated to wood fiber production.	Meets Goal. Timber yield estimated at about 12.4 MM board feet per year or about 0.4 MMBF than existing levels with the same visual and streamside management constraints. Mean annual increment for Management Area increases to about 170 board feet per acre per year.
Emphasize dispersed recreation activities.	Meets Goal. Increase in dispersed recreation use estimated at 15% over existing. All categories expected to increase except hiking which is projected for a 24% decline. Equestrian and rock hounding use expected to remain static. Largest increases estimated for hunting (+29%), gathering forest products (+39%), primitive picnicking and camping +14%), and driving for pleasure (+14%). This Alternative will require the greatest mileage of new roads and produce the highest output of dispersed recreation visitor days 248,482 visitor	Meets Goal. Increase in dispersed recreation use estimated at 10% over existing. All categories expected to increase except hiking which is projected for a 10% decline. Largest increases anticipated in gathering forest products for pleasure (+24%), primitive picnicking and camping (+12%), and hunting (+11%). Dispersed recreation is estimated at 238,541 visitor days per year under this Alternative.	Meets Goal. Increase in dispersed recreation use estimated at 10% over existing. All categories expected to increase except hiking which is projected for a 14% decline and rock hounding which remains static. Largest increases are projected in gathering forest products for pleasure (+30%), hunting (+23%), and driving for pleasure (+9%). Dispersed recreation is estimated at 236,828 visitor days per year under this Alternative.	Meets Goal. Increase in dispersed recreation use estimated at 10%. All categories expected to increase except hiking which is projected for a 10% decline. Largest increases are in gathering forest products for pleasure (+30%), hunting (+23%), and driving for pleasure. Dispersed Recreation is estimated at 237,347 visitor days per year under this Alternative.	Meets Goal. Projected increase in dispersed recreation use is less than 1%. However, dispersed recreation would still constitute over 93% of the total recreation use of the Planning Unit. Decreases are projected with snowmobiling (-2%), hiking (-5%), and driving for pleasure (-13%). Rock hounding would remain static. Largest increases are projected in gathering forest products for pleasure (+14%), hunting (+12%), and cross country skiing (+9%). This Alternative would require the least amount of additional road construction. Dispersed recreation	Meets Goal. Under the existing situation, about 94% of the recreation use of this area is in the form of dispersed recreation. Only 2 developed recreation facilities exist in the Planning Unit. The largest single recreation use is primitive picnicking and camping followed by driving for pleasure and hunting. The estimated existing level of dispersed recreation use is 215,000 visitor days per year.	Meets Goal. Same as Alternative 2. Dispersed recreation is estimated at 239,272 visitor days per year under this Alternative.

PLANNING GOAL	ALTERNATIVE 1	2	3	4	5	(Existing) 6	(Preferred) 7
	days per year). This indicates the close correlation between most forms of dispersed recreation and the available road system.				is estimated at 215,660 visitor days per year, the lowest output, except under existing conditions, of the Alternatives considered.		
Maintain or enhance water quantity on those sites with a favorable cost/benefit without imparing the soil resource or water quality.	All Alternatives will meet this goal although in varying degrees in terms of water yield. Also, each Alternative, including existing management, incorporate constraints to insure the meeting of existing Federal and State water quality standards and minimize the risk of any degradation of water quality. The maintenance of soil productivity and stability also has constraints applied to all project proposals.						
Estimated Percent Increase in Water Yield:	16%	12%	15%	13%	15%	-	13%
Produce a land adjustment plan that meets the management direction of the selected Alternative	This Land Management Plan includes a land ownership adjustment proposal for each Alternative designed to facilitate management under the particular land allocation selected. The implementation of any of these land adjustment proposals may involve further adjustments depending on the desires of the other land owners involved.						
Determine if existing utility corridors are adequate to meet future needs and whether or not alternate routes exist.	Each Alternative in this Land Management Plan includes management direction for the use of existing utility corridors and the establishment of alternate corridor routes across the Planning Unit. This direction must be flexible. A hierarchy of regional and national needs may indicate a need to change it in the future. In any case, all proposals for the use or construction of utility corridors must be examined through the NEPA process.						

PLANNING GOAL	ALTERNATIVE 1	2	3	4	5	(Existing) 6	(Preferred) 7
Encourage extraction and availability of mineral resources.	Meets Goal. The majority of the Planning Unit would be allocated to Management Area A with a well developed access road system to eventually follow. This would tend to encourage extraction particularly of marginal deposits. In the case of formal classification, the proposed Research Natural Area would be withdrawn from mineral entry.	Meets Goal. This Alternative would encourage extraction as access continued to be developed in Management Areas A, B, and C. The lack of roads in Management Area D would tend to effect the economic availabily of some mineral resources particularly any marginal deposits. Formal Classification of the Research Natural Area would be followed by mineral withdrawal.	Meets Goal. Better access would be developed in Management Area A, B, and C tending to encourage prospecting and extraction of marginal mineral deposits. Formal classification of the Research Natural Area would be followed by mineral withdrawal.	Same as Alternative Number Two.	Meets Goal. Better access would be developed in Management Areas A, B, and C tending to encourage availability and extraction. The proposed Research Natural Area would be withdrawn from mineral entry after formal classification. In the event of formal classification of the RARE II areas as wilderness, mineral development would have to be conducted in a manner compatible with the Wilderness Act (P.L. 88-577). Also, claims cannot be located in a Wilderness after midnight December 31, 1983.	Meets Goal. Most of the Planning Unit would be developed providing better access to remote areas and encouraging the availability and extraction of minerals. The proposed Research Natural Area and possible Wilderness designation of the RARE II Roadless Areas would have the same affect as in Alternative 3.	Meets Goal. Same as Alternative 2 except that the Proposed Research Natural Area is not included and would not be withdrawn from mineral entry.
Maintain or increase the economic base of local communities.	Meets Goal. Revenues going to counties as a result of grazing fees and timber receipts expected to increase by about $45,000 yearly. Number of jobs provided in wood industry and related general employment predicted to increase by 56. Increase in dispersed recreation use should also benefit economy of local community.	Meets Goal. Revenues going to counties as a result of grazing fees and timber receipts expected to increase by about $4,000 yearly. Number of jobs provided in wood industry and related general employment predicted to increase by 3. Increase in dispersed recreation use should also benefit economy of local community.	Meets Goal. Revenues going to counties as a result of grazing fees and timber receipts expected to increase by about $26,000 yearly. Number of jobs provided in wood industry and related general employment predicted to increase by 24. Some economic benefits will also be realized through increase in dispersed recreation.	Meets Goal. Revenues going to counties as a result of grazing fees and timber receipts expected to increase by about $1,000 annually. Number of jobs provided as a result of this Alternative expected to increase by 4. Some economic benefits will also accrue to the local community as a result of increase in dispersed recreation.	Meets Goal. About a $2,000 drop in revenues going to the counties anticipated. However, jobs provided as a result of this Alternative expected to remain the same as existing. Dollar imput to local community through increase in dispersed recreation should more than offset drop in revenues to counties.	Meets Goal. Existing management should maintain local economy with only minor changes.	Meets Goal. Revenues going to Counties as a result of grazing fees and timber receipts expected to increase by about $10,000 yearly. Number of jobs provided in wood industry and related general employment predicted to increase by 16. Increase in dispersed recreation use should also benefit economy of local community.

TABLE 2

SUMMARY OF IMPACTS

OUTPUT AND OPPORTUNITY POTENTIALS BY ALTERNATIVES

OUTPUT/OPPORTUNITY	UNIT	ALTERNATIVES 1	2	3	4	5	6 Existing	7
TIMBER[1/]	Board Feet (Million)	14.0	12.2	13.1	12.1	11.9	12.0	12.4
WATER	Acre Feet (Thousands)	314.7	304.3	311.3	306.3	310.7	271.2	305.9
FORAGE	Animal Months	1718	1515	1626	1509	1460	1508	1556
RECREATION								
Developed	Visitor Days (Thousands)	14.9	14.9	14.9	14.9	14.9	14.9	14.9
Dispersed	Visitor Days (Thousands)	248.5	238.5	236.8	237.3	215.7	215.0	239.3
ELK	Numbers	1106	1296	1426	1346	1376	1091	1312
PROJECTED ROAD NEEDS	Miles	65	49	57	52	36	49	51
TIMBER INDUSTRY EMPLOYMENT	Jobs	98	85	92	85	86	84	88
RETURN TO COUNTIES[2/]	Dollars (Thousands)	322.0	280.6	302.6	277.9	274.3	276.6	286.8
RETURN TO TREASURY	Dollars (Thousands)	966.0	841.7	907.9	833.8	822.9	829.8	860.5

1/ The volumes shown are calculated from existing data. Periodic reinventories of the timber resource including growth potential, etc., may cause these potentials and outputs to vary from those displayed, but the land management decisions finally adopted will remain constant.

2/ This is a hypothetical breakdown. Actually Kittitas County receives a percentage of the total Wenatchee National Forest revenues based on a ratio of National Forest land in Kittitas County compared to the total acres on the Wenatchee National Forest.

TABLE 3
SUMMARY OF NET 1/
TIMBER YIELDS IN MBF
FOR EACH ALTERNATIVE

ALTERNATIVE	1	2	3	4	5	6 Existing	7
	MBF	MBF	MBF	MBF	MBF	MBF	MBF
MANAGEMENT							
Management Area A	13,783.69	10,192.64	10,620.37	9,646.12	9,640.01	--	10,568.25
Management Area B	186.68	186.68	186.68	186.68	186.68	--	110.22
Management Area C	--	1,389.29	2,307.55	1,886.36	2,036.09	--	1,367.16
Management Area D	--	408.90	--	323.57	--	--	397.56
Management Area E	--	--	15.33	15.33	37.61	--	--
Management Area F	--	--	--	--	--	--	--
Prcposed Research Natural Area	--	--	--	--	--	--	--
RARE II Undeveloped Areas	--	--	--	--	--	(1,764.42) 2/	--
General Forest						11,396.71	
GRAND TOTAL	13,970.37	12,177.51	13,129.93	12,058.06	11,900.39	13,161.13	12,443.19
GRAND TOTAL MILLION B.F.	14.0	12.2	13.1	12.1	11.9	12.0 3/	12.4

1/ Refer to Table 19, Appendix A-27, for yield adjustment calculations.

2/ Included in allowable harvest but in hold category.

3/ Reduced to 12 million board feet to reflect present day visual and watershed constraints.

NOTE: The volumes shown are calculated from existing data. Periodic reinventories of the timber resource including growth potential, etc., may cause the potentials and outputs to vary from those displayed but the land management decisions finally adopted will remain constant.

TABLE 4
SUMMARY OF WATER
YIELD OUTPUTS 1/
IN ACRE-FEET FOR EACH ALTERNATIVE

ALTERNATIVE	1	2	3	4	5	6 Existing	7 Preferred
	Acre Ft./ Year	Acre Ft./ Year	Acre Ft./ Year	Acre Ft./ Year	Acre Ft./ Year	Acre Ft./ Year	Acre Ft./ Year
MANAGEMENT							
Management Area A	304,239	182,872	196,605	171,917	191,055	--	199,247
Management Area B	5,507	5,507	5,507	5,507	5,507	--	2,930
Management Area C	--	56,727	99,252	78,877	96,972	--	52,866
Management Area D	--	54,256	--	34,099	--	--	50,886
Management Area E	--	--	4,973	4,973	4,854	--	--
Management Area F	--	--	--	--	7,340	--	--
Proposed Research Natural Area	4,968	4,968	4,968	4,968	4,968	4,968	
RARE II Undeveloped Areas						7,340	
General Forest						258,894	
GRAND TOTAL	314,714	304,330	311,305	306,341	310,696	271,202	305,929

1/ Refer to Tables 22 and 23, Appendix A-43 and 44, for calculation of Water Yield Output by Subunit.

TABLE 5

SUMMARY OF RANGE

OUTPUTS IN AUM/YEAR

BY ALTERNATIVES

ALTERNATIVE	1	2	3	4	5	6 Existing	7 1/
	AUM/Year	AUM/Year	AUM/Year	AUM/Year	AUM/Year	AUM/Year	AUM/Year
MANAGEMENT							
MANAGEMENT AREA A	1692	664	771	657	617	--	669
MANAGEMENT AREA B	26	26	26	26	26	--	13
MANAGEMENT AREA C	--	492	829	538	632	--	554
MANAGEMENT AREA D	--	333	--	288	--	--	320
MANAGEMENT AREA E	--	--	--	--	--	--	--
MANAGEMENT AREA F	--	--	--	--	185	--	--
PROPOSED RESEARCH NATURAL AREA	--	--	--	--	--	--	--
RARE II UNDEVELOPED AREAS	--	--	--	--	--	185	--
GENERAL FOREST	--	--	--	--	--	1323	--
GRAND TOTAL	1718	1515	1626	1509	1460	1508	1556

1/ AUM/Year outputs for Alternative 7 were calculated by prorating the Acres/AUM ratio for each Management Area in Alternative 2.

TABLE 6

SUMMARY OF DISPERSED RECREATION OUTPUTS IN 1/
VISITOR DAYS PER YEAR BY
ALTERNATIVES

ALTERNATIVES	#1	#2	#3	#4	#5	#6 EXISTING	#7
	V.D./YEAR	V.D./YEAR	V.D./YEAR	V.D./YEAR	V.D./YEAR	V.D./YEAR	V.D./YEAR
RECREATION ACTIVITY							
SNOWMOBILING	9,861	9,565	9,587	9,577	8,642	8,815	9,709
CROSS COUNTRY SKIING	705	702	689	696	705	645	701
MOTOR BIKES	16,185	15,373	15,308	15,306	15,184	15,050	15,662
4-WHEEL DRIVE	12,010	11,035	11,218	11,018	11,131	10,750	11,262
HIKING	5,200	6,222	5,909	6,216	6,523	6,880	6,252
EQUESTRIAN	1,505	1,576	1,549	1,573	1,556	1,505	1,580
HUNTING	35,809	33,220	34,113	33,218	32,237	27,735	33,287
ROCK HOUNDING	2,150	2,194	2,150	2,185	2,150	2,150	2,191
FISHING	3,658	3,690	3,658	3,678	3,658	3,655	3,686
GENERAL:							
a. GATHERING FOREST PRODUCTS FOR PLEASURE	21,526	19,207	20,116	19,243	17,611	15,480	19,220
b. PRIMITIVE PICNICING AND CAMPING	74,440	72,922	69,662	72,004	66,067	65,145	72,810
c. DRIVING FOR PLEASURE	65,108	62,510	62,544	62,308	49,871	57,190	62,912
TOTALS	248,157	238,216	236,503	237,022	215,335	215,000	239,272

1/ Refer to Appendix A-11 to A-19 for Dispersed Recreation Output Calculations.

TABLE 7

SUMMARY [1]
COMPARISON OF ELK NUMBERS
FOR EACH ALTERNATIVE

ALTERNATIVE	1	2	3	4	5	6 Existing	7 Preferred
	Elk No.	Elk No.	Elk No.	Elk No.	Elk No.	Elk No.	Elk No.
MANAGEMENT							
Management Area A [2]	1062	656	725	644	604	--	662
Management Area B [3]	32	32	32	32	32	--	12
Management Area C [3]	--	381	640	474	539	--	427
Management Area D [4]	--	215	--	167	--	--	207
Management Area E [4]	--	--	17	17	14	--	--
Management Area F [4]	--	--	--	--	175	--	--
Proposed Research Natural Area [4]	12	12	12	12	12	12	
RARE II Undeveloped Areas [4]						175	
General Forest [2]						904	
GRAND TOTAL	1106	1296	1426	1346	1376	1091	1312

1/ Refer to Tables 25, 26 and 27 in Appendix A for a breakdown of Elk Population Calculations by Subunit.

2/ High road density and access for public use.

3/ Low to moderate road density and access for public use.

4/ No road planned within area.

TABLE 8

SUMMARY OF
PLANNED VISUAL QUALITY OBJECTIVES
IN ACRES FOR EACH ALTERNATIVE

VISUAL QUALITY OBJECTIVE 1/	#1 ACRES	#2 ACRES	#3 ACRES	#4 ACRES	#5 ACRES	#6 EXISTING ACRES	#7 ACRES
PRESERVATION	1,197	1,197	1,197	1,197	1,197	-0-	-0-
RETENTION	10,490	10,490	10,490	10,490	22,010	13,472	2,273
PARTIAL RETENTION	58,871	58,871	58,871	58,871	48,631	61,524	74,787
MODIFICATION	38,495	38,495	38,495	38,495	37,215	34,057	31,993
TOTALS	109,053	109,053	109,053	109,053	109,053	109,053	109,053

1/ Refer to Table 20, Appendix A, Showing Breakdown of Planned Visual Quality Objective Acres For Each Allocation By Sub Unit.

TABLE 9

MATRIX SHOWING PROJECTED TIMBER HARVEST ACRES BY LOGGING SYSTEM AND MILES OF SYSTEM ROAD NEEDED FOR EACH ALTERNATIVE

ALTERNATIVE	1	2	3	4	5	6 EXISTING	7 3/
ACTIVITY							
1. TIMBER HARVEST METHODS:							
A. Conventional 1/ Systems (Acres)	67,991	58,658	62,946	60,424	54,625	58,948	59,133
B. Advanced 2/ Systems (Acres)	13,420	11,254	12,329	11,482	12,133	11,502	11,180
C. TOTAL ACRES	81,411	69,912	75,275	71,906	66,758	70,450	70,313
2. PERCENT OF AREA BY HARVEST METHOD							
A. Conventional System (%)	83.5	83.9	83.6	84.0	81.8	83.7	84.1
B. Advanced System (%)	16.5	16.1	16.4	16.0	18.2	16.3	15.9
3. Projected miles of additional system road needed to implement timber harvest methods in Item 1a and 1b above.	65	49	57	52	36	49	51

1/ Conventional Systems include tractor, high lead and short and medium span skyline techniques.

2/ Advanced Systems include long-span skyline and helicopter techniques.

3/ Figures shown for Alternative 7 were prorated from data developed for Alternative 2.

TABLE 10

ECONOMIC SUMMARY

ALTERNATIVES	1	2	3	4	5	6	7
	Commodity	DES Preferred	Wildlife	Mix	Amenity	Existing	Proposed
Timber Harvest							
Potential Annual Yield (M bd. ft./yr.)	13,970	12,178	13,130	12,058	11,900	12,000 1/	12,443
Return to Federal Treas. ($/yr.)	963,930	839,868	905,970	832,002	821,100	828,000	858,575
25% Fund to County ($/yr.)	321,310	279,956	301,990	277,334	273,700	276,000	286,192
Grazing							
Potential AUM's	1,718	1,515	1,626	1,509	1,460	1,508	1,556
Return to Federal Treas. ($/yr.)	2,074	1,829	1,962	1,821	1,762	1,821	1,878
25% Funds to County ($/yr.)	692	610	655	608	608	607	627
Subtotals							
Return to Federal Treas. ($/yr.)	966,004	841,697	907,932	833,823	822,862	829,821	860,453
Return to County ($/yr.)	322,002	280,566	302,645	277,942	274,308	276,607	286,819
TOTALS ($/yr.)	1,288,006	1,122,263	1,210,577	1,111,765	1,097,170	1,106,428	1,147,272
Unrealized Potential							
Cost of Recreation, Wildlife Habitat Mgmt., etc. in reduced total receipts compared to Alternative 6 ($/Yr.)	+181,578	+15,835	+104,149	+5,337	-9,258	0	+40,844
		EMPLOYMENT					
Number of jobs provided wood industry 2/ (Logging & Sawmills)	98	85	92	85	84	84	88
Number of jobs provided - General employment 3/	295	256	277	266	253	253	265

1/ Estimated Potential Annual Yield with existing visual and streamside management constraints.

2/ From data in USDA Forest Service Research Paper PNW-189 by Brian R. Wall and Daniel R. Oswald.

3/ Based on employment multiplier of 3.01.

NOTE: The 25% return to Counties is hypothetical. The actual return to the Counties is based on a ratio of National Forest acres within the County to total acres of National Forest land.

VII. IDENTIFICATION OF FOREST SERVICE PREFERRED ALTERNATIVE

Alternative 7 is a refinement of Draft Environmental Statement Alternative 2. In terms of land allocation and estimated potential output, Alternative 2 and 7 are very similar. Alternative 7 reflects public concerns, and improves effectiveness of management. In summary, the major changes made in Alternative 2 to derive Alternative 7 are as follows:

A. The Proposed Research Natural Area is dropped in Alternative 7 and the area involved allocated to Management Areas A and D which were adjacent to the Research Natural Area in Alternative 2. A Research Natural Area Committee report recommended against the establishment of an RNA in this area.

B. Minor adjustments were made in the boundaries of Management Area C in order to include known calving areas and important elk forage and cover areas, improve compatibility with adjacent State Game Department lands and locate boundaries on identifiable features.

C. An area near Buck Meadows in the West Subunit was changed from Management Area C to Management Area D in Alternative 7. The area involved receives intensive dispersed recreation use particularly as a staging area for outlying trail systems. An allocation to Management Area D will emphasize the continuation of this existing use; a point about which much public concern was expressed.

D. Allocations to Management Area B (winter range) were reduced to eliminate densely timbered north slopes which exhibit little capability of providing forage. These areas are located at the upper edge of the winter range where snow accumulations limit use on all but the exposed southerly aspects.

E. The visual quality objective for Management Area D was changed to Partial Retention throughout that area. This will maintain a quality visual experience while allowing reasonable latitude for possible development of recreation facilities and wildlife habitat enhancement.

F. Numerous minor changes were made in the text of the Final Environmental Statement in order to answer questions raised by the public and clarify the intention of management.

The goals for the Kittitas Planning Unit summarize the concerns of the public and land managers about the future management of the Planning Unit. Those goals provided the necessary tool for evaluating the alternatives and a frame of reference for developing the preferred alternative rationale. The goals for the Planning Unit appear as headings in the rationale discussion that follows:

Diversify and Enhance Existing Habitat to Sustain or Improve Habitat for Game and Nongame Wildlife Species.

1. The various management strategies practiced in Alternative 7 will provide a diversity of wildlife habitat types. These habitats range from intensively managed areas such as those in Management Area A to areas managed to retain a natural appearance in Management Area D.

2. Resource management strategies such as visual resource, snag and streamside unit management will provide some dead trees and old growth wildlife habitat in all areas including the most intensively managed areas.

Manipulate Elk Habitat to Sustain a Balanced Mix of Forage and Cover Needs with Emphasis on Providing Opportunities for Unroaded Hunting Experience.

1. Enhancement of big game habitat will provide a potential estimated 20 percent increase in elk numbers. The actual change in elk numbers will be dependent upon State Game Commission policies and on conditions on lands off the Planning Unit.

2. About 20 percent of the Planning Unit is managed specifically to improve elk habitat and provide unroaded hunting opportunities in Management Area C.

3. Management Area D, occupying 19 percent of the Unit, will provide approximately the same benefits to elk as Management Area C.

Intensify Range Management to Improve Forage and Provide More Opportunity for Livestock Grazing.

1. Alternative 7 will provide an estimated 3 percent increase in available AUM's.

Optimize Timber Production Based on Site Potential.

1. Alternative 7 concentrates timber management on the more highly productive sites.

2. The potential annual timber yield of 12.4 MM board feet compares favorably with the present annual yield considering RARE II, visual resource management, and streamside management units.

Emphasize Dispersed Recreational Activities.

1. Management Area D, occupying 19 percent of the Planning Unit, emphasizes dispersed unroaded recreation.

2. The rest of the Unit is managed for a combination of dispersed roaded and unroaded recreation.

Maintain or Enhance Water Quality on Those Sites with a Favorable Cost Benefit Without Impairing the Soil Resources or Water Quality

1. Water yield in Alternative 7 is increased 13 percent.

2. Major impacts on soils and water resources associated with road construction and timber harvesting are concentrated in Management Area A. All such activities will be carried out to maintain water quality and protect the fishery resource.

Produce Land Adjustment Direction that Meets Management Needs for the Selected Alternative

Land adjustment goals for Alternative 7 are to consolidate National Forest ownership in Management Area D, block up National Forest land in identified target areas on the Kittitas Unit and adjust ownership to obtain more efficient management in other areas.

Determine if Existing Utility Corridors Are Adequate to Meet Future Needs and Whether or not Alternate Routes Exist

1. Existing powerline corridors on the Planning Unit are adequate to meet future demands to about year 2000. Rather than enlarging existing corridors or creating new corridors, the Bonneville Power Administration is combining transmission lines by using redesigned towers and conductors insofar as load growth allows.

2. Three potential Northern Tier Pipeline routes have been identified on the West Subunit. None of the proposals are firm at this time.

3. All utility corridor needs will receive full consideration through the NEPA process.

4. Proposed utility corridors must be compatible with the management intent of any Management Areas they may cross.

Encourage Extraction and Availability of Mineral Resources

1. All mineral activities are operated under existing laws and regulations.

Maintain or Increase the Economic Base of Local Communities.

1. Alternative 7 results in potential annual returns of $860,453 to the Federal Government and $286,819 to the County governments.

2. Alternative 7 provides 88 jobs in logging and sawmill operations and 265 jobs in general employment.

3. Alternative 7 essentially maintains the existing economic situation.

In summary, Alternative 7 best meets the goals that were established for the Kittitas Planning Unit. Public concerns centered on three major issues: Enhancement of wildlife habitat and maintenance of unroaded elk hunting opportunities, maintenance of opportunities for dispersed unroaded recreation, and the optimization of timber potential. Alternative 7 provides the proper balance in management to satisfy these prime concerns. Table 1, page 115, shows the estimated capacity of each alternative to satisfy the ten Kittitas planning goals.

VIII. MANAGEMENT REQUIREMENTS, CONSIDERATIONS AND MITIGATION MEASURES

All management activities will be planned and coordinated with other resource uses and an analysis and evaluation of potential impacts made in accordance with regulations in the National Environmental Policy, Forest and Rangeland Renewable Resources, and Forest Management Acts. In addition, the following requirements, considerations and mitigation measures were identified.

AIR

Air quality will normally be maintained. However, there may be times when it is temporarily impaired by wildfire, controlled burning and other management activities. Controlled burning will be planned and designed to eliminate smoke in designated areas as identified in the current Forest Service Manual. Standards are established through the Clean Air Act (PL 88-207) as amended in June, 1974. The objective of smoke management is achieved through maximum venting height with the minimization of the nuisance effect of smoke on any segment of the public. Since the primary impact of smoke is visual in nature, steps will be taken to inform the public of fuels management to increase their understanding of the program.

TOPOGRAPHY, GEOLOGY AND SOILS

Mitigation measures to prevent soil losses and consequent sedimentation include proper location, construction and maintenance of improvements such as roads, trails, bridges, etc. Other available measures include revegetating obsolete roads after restoration of normal drainage, hydromulching road cuts, prompt reforestation or seeding of deforested and disturbed areas and the utilization of sophisticated logging systems such as helicopters, balloons or skyline logging in the more critical areas. Another measure is to insure that residue burning is done when soil moisture content is great enough to minimize soil surface temperatures and prevent the destruction of the "duff" layer or formation of impermeable layers.

WATER

The Organic Administration Act of 1897 establishes direction for managing the water resources on National Forest lands. The Region 6 Streamside Management Unit Policy establishes guidelines for protecting this resource. All Class I and II streams within the Planning Unit have been identified and activities within these areas will be adjusted to afford maximum water quality protection. Class I and II streams warrant the highest degree of protection and will be managed according to the recommendations prescribed in R-6 Supplement No. 2 to FSM 8223 dated March, 1974.

Class III and IV streams warrant a normal degree of protection including preventing soil movement, maintaining satisfactory downstream water temperatures and keeping debris from moving downstream into higher class streams. Stream classification and the recommended management practices are discussed further in Appendix E. In addition, an extensive non-point water quality monitoring program is conducted throughout the Unit to inform managers of pollution sources on National Forest lands.

FLOODPLAINS AND WETLANDS

Forest Service policy is to comply with the intent and direction of Executive Order 11988, Floodplain Management, (42FR 26951) and Executive Order 11990, Wetland Management, (42FR 26958) through the use of the Forest Service Land Management and NEPA planning and decision making process.

A flood hazard analysis and evaluation will be made prior to the acquisition or exchange of land within floodplains. In addition, a floodplain analysis and evaluation will be made as part of the decision process when sites within floodplains are being considered for structures or developments. Documentation of these evaluations will be an integral part of plan development (FSH 2527).

FISH HABITAT

Overall management direction will be aimed at providing the maximum habitat for fisheries. Consideration will be given to the retention or establishment of nesting and feeding areas, satisfactory cover, and adequate clean spawning gravels. The Regional Fish Management Policy, Appendix F-1, states the Forest Service fish habitat management goals.

Coordination with appropriate Federal and State of Washington agencies is necessary before beginning any project affecting this resource. Monitoring of fish habitat will include trout creel census.

WILDLIFE

Management direction emphasizes maintenance of optimum habitat conditions for big game and habitat diversity to maintain populations of other wildlife species. Self sustaining population levels of snag dependent wildlife species are achieved by implementing the Forest Service, Region 6 Dead Tree (Snag) Management Policy listed on Appendix page F-9. Hard snag requirements for woodpeckers are shown on pages F-11 and F-12.

Page F-15 lists the Wildlife indicator species for the Wenatchee National Forest and how their populations are monitored. Essential wildlife habitats such as beaver ponds, lakes, potholes, swamps, meadows and elk calving areas will be preserved.

Direction is further provided for the protection of threatened and endangered species habitat by the Endangered Species Act of 1966 and Forest Service policy. The present allocation of land and establishment of management direction does not preclude the preservation of endangered or threatened species habitat that is identified through subsequent inventories.

VEGETATION

Species composition and successional stages of plants have been greatly modified by past activities. Changes will continue to occur as additional areas are logged and other areas mature. Protection of any threatened or endangered plant species that are found is required. An inventory is in progress. Threatened and endangered species are managed to 1) halt reduction in the population of classified species and prevent deterioration of their critical habitats; 2) provide interim management of any located species and their critical habitats pending development of recovery technology; 3) achieve recovery of the classified species and when completed, justify declassification.

VISUAL RESOURCES

The visual quality objectives for areas along the Pacific Crest National Scenic Trail were changed from retention to modification in the Kittitas Unit. Each environmental analysis of activities affecting the Pacific Crest National Scenic Trail will recognize opportunities for visual enhancement and rehabilitation measures and the projected cumulative effect of management activities on the trail environment. Mitigation measures include complete slash cleanup, prompt revegetation and manipulation of vegetation to open up vistas or screening undesirable views.

Unique or special features such as rock monuments, mountain meadows, lakes, cliffs, etc., that are randomly located throughout the Planning Unit will be managed to retain their intrinsic character.

CULTURAL RESOURCES

Analysis of proposed ground disturbing activities will include a cultural resource survey conducted with sufficient detail to identify historical or archeological sites or areas. Any that are found will be inventoried and evaluated to assure compliance with the National Historic Preservation Act of 1966 and Executive Order 11593, May 13, 1971, "Protection and Enhancement of The Cultural Environment".

In compliance with Section 2 of Executive Order 11593, none of the alternatives will result in the transfer, sale, demolition or substantial alteration of land seemingly with characteristics or future nomination to the National Register of Historic Places.

In compliance with Section 101(B)(4) of the National Environmental Policy Act and Section 1(3) of Executive Order 11593, none of the alternatives will affect, either favorably or adversely, the preservation and enhancement of non-federally owned districts, sites, buildings, structures, and objects of historical, archeological, architectural or cultural significance.

SOCIAL-CULTURAL

The American Indian Religious Freedom Act of August 11, 1978 (P.L. 95-341) protects and preserves for American Indians their inherent right of freedom to believe, express and exercise their traditional religions including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites. A continuing survey of potential traditional sites is required in order to establish an inventory. Mitigation includes identifying sites in cooperation with the Yakima Indian Nation religious leaders and then providing proper protection.

PACIFIC CREST NATIONAL SCENIC TRAIL

The following actions are necessary to implement the direction in P.L. 95-625, the National Parks and Recreation Act of 1978, as it amends P.L. 90-543, the National Trails System Act of 1968:

By September 30, 1981, prepare and submit to Congress, a comprehensive plan for the acquisition, management and use of the trail. The plan will be developed with full consultation with affected Federal land managing agencies, the governors of the affected states and the Pacific Crest National Scenic Trail Advisory Council. Region 6 is assigned the responsibility of developing the comprehensive plan. The plan will include the following items.

- Specific objectives and practices for trail management, including the identification of all significant natural historical and cultural resources to be preserved, details of cooperative agreements to be consummated and an identified carrying capacity of the trail and a plan for its implementation.

- An acquisition or protection plan by fiscal year, for all lands to be acquired in fee or lesser interest, along with detailed explanation of anticipated necessary cooperative agreements for any lands not to be acquired. Target date to secure the entire trail is January 1, 1986.

- General and site specific development plans including anticipated costs.

IX. CONSULTATION WITH OTHERS

A. INTRODUCTION

On April 21, 1977, the Wenatchee National Forest released 750 Kittitas Planning Unit brochures to the public with a request for input by June 1, 1977. The purpose of this was:

1. To display concerns and goals generated through listening sessions and public contact.

2. To develop resource planning objectives that were responsive to the public's desires, needs and wants.

3. To help identify the Preferred Alternative.

4. To establish a "mailing list" so that the interdisciplinary team could provide periodic information to interested citizens.

B. SUMMARY OF PUBLIC RESPONSE

A total of 60 response sheets were received from a total public distribution of 750 brochures. Responses were received from individuals, groups, agencies and industry. All responses were either recorded on the response sheet included with the brochure or in a personal attached letter.

More than 95 percent of all responses were from the State of Washington. Sixty-four percent were from urban areas while the remaining 36 percent were rural. Also, 54 percent of the total responses were from the westside of the Cascades.

C. ANALYSIS OF PUBLIC RESPONSE

Based on public input received (60 responses) from the Kittitas brochure, the team manually analyzed the responses without the use of a Code-involve system. Each letter was reviewed and comments referring to specific resource assumptions were tabulated. This data was then analyzed by categorizing the comments into three classes: (1) Agree with assumptions; (2) Disagree with assumptions; (3) No comment. Next, "Resultant Statements" were developed from a summary of the public's desires for management of the Unit. The greatest response concerned the recreation assumptions (38 percent); then transportation (35 percent); and timber (26 percent). The remaining responses were almost evenly divided between the other resources. This data was utilized to obtain the management goals for the Unit. Individual letters and/or response sheets and the "Analysis of Public Response to the Kittitas Planning Unit Brochure," June 15, 1977, are maintained on file in the Wenatchee Forest Supervisor's Office as a permanent record reference.

D. DRAFT ENVIRONMENTAL STATEMENT

The Draft Environmental Statement was filed with the Environmental Protection Agency on July 31, 1978, and 700 copies distributed to agencies, organizations, individuals and companies. Responses to the Draft Statement were received from the following:

1. Federal

U.S. Advisory Council on Historic Preservation
U.S. Department of Agriculture, Soil Conservation Service
U.S. Department of the Army, Corps of Engineers
U.S. Department of Housing and Urban Development
U.S. Department of the Interior, Bureau of Reclamation
U.S. Department of the Interior, Office of the Secretary, Portland, OR
U.S. Department of the Interior, Office of the Secretary, Washington, D.C.
U.S. Department of Energy, Bonneville Power Administration
U.S. Environmental Protection Agency

2. State

State of Washington
Department of Game
Department of Ecology
Washington State Parks and Recreation Commission

3. Local

Public Utility District No. 1 of Chelan County

4. Organizations

Alpine Lakes Protection Society
Black Hills Audubon Society
Cle Elum Chamber of Commerce
International Snowmobile Industry Association
Kittitas County Snowmobilers, Inc.
The Mountaineers
North Central Cascades Miners Assocation
Northwest Pine Association
Pacific N.W. 4-Wheel Drive Association
Seattle Audubon Society
Sierra Club - Cascade Chapter
Wandering Willys Jeep Club
Western Forest Industries Association

5. Individuals

Walter D. Bailey
Alexander and Margaret Deak
John Deonigi
Drs. Robert and Willa Fisher
Marilyn Fife
Harry, Elsie and Ella Hale
Patrick J. Hand
John J. Hanson
S. E. Harris, M.D.
Stanley D. and Kay A. Humann
Archie Mills
Stanley W. Murphy
Charles Raines
Joseph C. Schott
Joan Scott
Edwin W. Smith
Ira L. Spring
Jack White

6. Companies

Boise Cascade Corporation
Burlington Northern Inc.
Silva Tree Management
Texaco Inc.

In summary, a total of 49 replies were received in response to the Draft Environmental Statement. These consisted of 13 letters from Government agencies, 14 from organizations, 18 from individuals and 4 from companies.

Response input received on the Draft Environmental Statement does not necessarily dictate a major change in the Preferred Alternative. Rather, each comment is considered as an appropriate measure of public opinion. Comments were evaluated against the planning goals, resource potential and anticipated, social, economic and environmental effects.

The input received was but one factor utilized in the decision making process to select the Preferred Alternative (Alternative 7). The decision dealing with land allocation and management direction in the Final Environmental Statement is a result of the decision makers' considerations of all the information available to them, rather than a poll of responses.

All of the comments made in the responses were analyzed to determine if they related to a lack of information that might alter the proposed action, or if they were opinion and indicated a preference for one form of allocation or alternative over another. Some letters asked for clarification of particular parts of the Statement while others merely expressed preferences for different land allocations and/or land use activities.

When opinion was stated in a letter, it was recognized as such and tabulated. The tabulated opinions provided the decision makers with a summary of respondents' opinions about the alternatives or specific issues.

Comments received about the Draft Impact Statement resulted in corrections, deletions and revisions in the format, word changes and general clarification of confusing items. These were incorporated in the Final Impact Statement. Responses to specific comments indicate where changes were made. In some instances, requests for additional information may not be currently available and those were so noted.

SUMMARY OF PUBLIC RESPONSE
TO
KITTITAS LAND MANAGEMENT PLAN
DRAFT ENVIRONMENTAL STATEMENT

1. SUMMARY OF WHO RESPONDED

	ALTERNATIVE FAVORED							
RESPONDENT	None	1	2	3	4	5	6	Total
Federal Government	9	0	0	0	0	0	0	9
State Government	2	0	0	0	1	0	0	3
Local Government	1	0	0	0	0	0	0	1
Organization	2	3	8	0	0	1	0	14
Individual	3	2	5	0	0	4	4	18
Company	0	3	1	0	0	0	0	4
TOTALS	17	8	14	0	1	5	4	49

2. SUMMARY OF RESPONDENTS PLACE OF RESIDENCE

	ALTERNATIVE FAVORED							
	None	1	2	3	4	5	6	Total
Kittitas County	0	2	4	0	0	0	3	9
Other Eastern Washington	6	0	1	0	0	0	0	7
Western Washington	7	4	7	0	1	5	1	25
Other States and Washington, D.C.	4	2	2	0	0	0	0	8
TOTALS	17	8	14	0	1	5	4	49

3. SUMMARY OF HOW PUBLIC RESPONDED

	ALTERNATIVE FAVORED							
	None	1	2	3	4	5	6	Total
Letter	14	8	13	0	1	3	4	43
Report	1	0	0	0	0	1	0	2
Resolution	1	0	0	0	0	0	0	1
Card	1	0	1	0	0	1	0	3
TOTALS	17	8	14	0	1	5	4	49

4. RESPONSES TO SPECIFIC ISSUES

A. Off-Road Vehicles

1)	More restrictions on ORV use are needed.	3
2)	The plan does not recognize the importance of ORV use in the Planning Unit.	6

B. Pacific Crest National Scenic Trail (PCNST)

1)	The PCNST corridor must be maintained and protected by utilizing the highest visual standards, purchasing private lands, etc.	5
2)	The visual standard along the trail should be changed to modification.	1
3)	The final E.S. should include an interpretative plan for this section of trail.	1

C. RARE II, Wilderness, Roadless

1)	There should be some areas allocated to a roadless future in both subunits.	4
2)	Designate more area to Wilderness.	2
3)	Roadless or Wilderness Areas are not desirable or needed.	6

D. Land Exchanges

1)	The Burlington Northern target area on the Kittitas Unit is unacceptable.	1
2)	The Forest Service should consolidate its ownership in the Manastash Ridge and/or Pacific Crest areas.	3
3)	The Alternative 2 proposal is most acceptable.	1
4)	The land exchange sections are not properly addressed. Maps or changes in the written section are needed.	4
5)	The land adjustment proposal in Alternative 3 should be adopted as an interim plan.	1

E. Research Natural Area

1) There is no explanation of a need for the RNA. If a need cannot be shown, the proposal should be dropped. 3

2) There should be a RNA as depicted. It should be enlarged to include more of the creek. 2

F. Roads

1) Keep road construction to a minimum and use minimum standards. 2

2) The estimated mileage of roads to be constructed and reconstructed should be given by construction standard. Also, existing planned roads should be shown on maps. 2

3) The plan should be specific about road closures, road management, etc. 2

All response letters are reprinted on the following pages in the order in which they were received. Replies to substantive comments are included with each response.

ALPINE LAKES
protection society

5529 - 27 Avenue N.E.
Seattle, Washington 98105

August 14, 1978

John L. Rogers, Forest Supervisor
Wenatchee National Forest
Wenatchee, Washington 98801

(1)

Dear sir,

I wish to respond to the Kittitas Land Management Plan, Environmental Impact Statement, dated July 31, 1978. As a Board member of Alpine Lakes Protection Society, these statements will reflect their concerns.

Rationale for agreeing that Alternative 2 is the most acceptable choice is:

1. An unroaded hunting experience may be provided that meets the needs of other users of the forest. It substitutes for decling wilderness experience opportunities. Hiking opportunities could be increased by markers indicating trails leading from Hiway 97 and I-90, etc.

2. Timber production will be concentrated on the more highly productive, cost efficient sites. Few if any new roads would be needed to carry out the projects. That is a plus.

3. Land exchanges in the Wilson Creek area will benefit all parties if consolidation takes place.

4. Protection of Tronson/Naneum Ridge is needed. It is evident that it has been eroded by careless driving overland by Fall hunters. Plans for no ORVs will improve it.

145

Questions not answered by the D.E.S. should be addressed.

(1) 1. Hiking would be decreased 10% in Alternative 2, the P.101 table indicates. How is this possible if the trails are maintained?

(2) 2. Why modify the Pacific Crest Trail shade? Why not treat loss of shade on private land as "irretrievable"? Trees will grow again and lessen the contrast to hikers. To remove trees from all sections increases potential for early water runoff.

(3) 3. Why not describe the location of the proposed Natural Area more fully? Map hatching and brief mention on pages 67 and 71 is not very informative. We approve the choice of Manatash Ridge for the project.

Faye Ogilvie

Faye Ogilvie

By default the Alpine Lakes are here....by design they will remain.

1. It is estimated that the existing trail mileage will decrease by 10 percent because of the new roads that will be constructed in the Planning Unit. New trail construction, including connecting spur trails may offset this anticipated decline in trail mileage. Location and development of new trails will be based on opportunities presented, need and suitability.

2. Any timber removal from National Forest land in this area will be done in an orderly manner with consideration of all resources and in coordination with activities occurring on neighboring private land.

3. The proposed Taneum Research Natural Area was dropped by the Research Natural Area Committee and does not appear in Alternative 7. The RNA Committee decided that there are already enough areas representing subalpine fir forest types in Washington and Oregon and the proposed Taneum Area did not fill a research need. The area is described more fully on page 46 of the Final Environmental Impact Statement.

Mr John L. Rogers
Forest Supervisor
Wenatchee National Forest
P.O. Box 811

Omak, Wash.
8-14-78

(2)

Dear Sir:

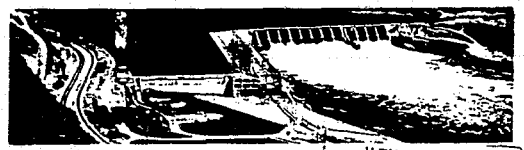
I thank you for giving me an opportunity to Comment on the Kettler Land Management Plan.

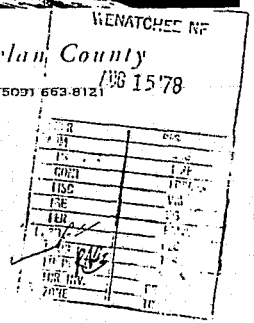
First of all I'm sure the paper you put upside down were on purpose to see if we'd read the Volumincus report - I did.

After careful review I must go along with Alternative 2 - I do feel road construction should be reviewed and perhaps alternative logging methods be adopted which require fewer roads - Also roads constructed for recreation should be reduced - There are tremendous rewards in recreation, wildlife, environmental logging when fewer roads are built

I thank you,

Edwin W. Smith





Public Utility District No. 1 of Chelan County

P. O. BOX 1231 · WENATCHEE, WASHINGTON 98801 · (509) 663-8121

August 14, 1978

Mr. John L. Rogers, Forest Supervisor
Wenatchee National Forest
P. O. Box 811
Wenatchee, WA 98801

3

Dear Mr. Rogers:

Kittitas Land Management Plan
Draft Environmental Statement

The District has completed its review of the Draft Environmental Statement for the Kittitas Land Management Plan. In general, we feel that the E.I.S. is well written and offer only the following comment.

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It is our opinion that energy represents a high national priority, both in its production and conservation. Our nation's National Forests and forest lands represent a potential energy resource through either conversion of forest and mill wasts or the planned use of forest lands for bio-mass production ultimately utilized for conversion to electrical energy.

Estimates of this potential should be made for each of the management alternatives and included in the final Environmental Statement. To assist you in this effort please refer to Bonneville Power Administration's Draft Environmental Impact Statement on the Role of BPA in the Pacific Northwest Power Supply System, Part 1 - The Regional Electric Power Supply System, Chapter V, pages 133 through 145. Additional information may be obtained from the Northwest Energy Policy Project Report, Study Module III-B, Energy Supply and Environmental Impacts - Unconventional Sources, pages 109 through 133 and pages 150 through 160.

1

We appreciate the opportunity to comment and hope that we have been of assistance to you in your efforts to comply with the National Environmental Policy Act.

Very truly yours,
System Planning and Design

Jim Huffman,
Environmental Coordinator

cc: Mr. Elmore
cc: Mr. Kurtz
cc: Mr. Bland

1. A section on unconventional sources of energy was added to the discussion entitled Energy on page 42 of the F.E.I.S.

United States Department of the Interior

BUREAU OF RECLAMATION
YAKIMA PROJECT OFFICE
1917 MARSH ROAD
P.O. BOX 1749
YAKIMA, WASHINGTON 98907

IN REPLY REFER TO: 410

August 14, 1978

125.

(4)

Mr. John L. Rogers, Forest Supervisor
Wenatchee National Forest
P. O. Box 811
Wenatchee, Washington 98801

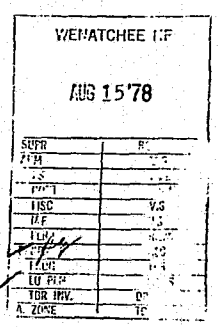
Dear Mr. Rogers:

We have reviewed the draft Environmental Statement for the Kittitas Land Management Plan. We have no comments and do not believe that any of the management alternatives affect our Project operations.

Thank you for giving us the opportunity for the review.

Sincerely yours,

W. G. Gray
Project Superintendent



148

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
SEATTLE AREA OFFICE
ARCADE PLAZA BUILDING, 1321 SECOND AVENUE, SEATTLE, WASHINGTON 98101

REGION X
Arcade Plaza Building
1321 Second Avenue
Seattle, Washington 98101

August 9, 1978

IN REPLY REFER TO:
10.3SS:Moore:mlt
M/S 421
442-7229

Mr. John Rogers
Forest Supervisor
Wenatchee National Forest
P.O. Box 811
Wenatchee, Washington 98801

(5)

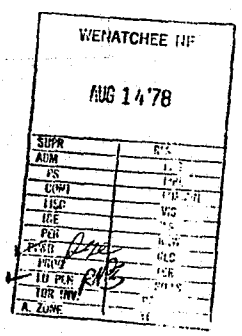
Dear Mr. Rogers:

Subject: Forest Service, Kittitas Land Management Plan
Draft EIS

We appreciated the opportunity to review the Forest Service Draft Environmental Impact Statement for the Kittitas Land Management Plan. The proposed actions and alternatives do not fall within this Department's area of jurisdiction or expertise. We therefore have no comments.

Sincerely,

Richard L. Moore
Environmental Clearance Officer



Drs. Robert & Willa Fisher
9567 Olympus Beach Rd. NE
Bainbridge Island, WA 98110

August 17, 1978

(6)

Gentlemen/Ladies:

My wife and I must take a strong stand against the downgrading of wilderness for logging, in the Kittitas planning unit of the Wenatchee National Forest. We would much prefer an emphasis on wilderness and hope so notify the president

Sincerely. Robert B Fisher

STANLEY E. HARRIS, M.D., INC., P.S.
GENERAL PRACTICE OF MEDICINE
13050 MILITARY RD. SO.
SEATTLE, WA 98168

August 17, 1978

(7)

Wenatchee National Forest
P. O. Box 811
Wenatchee, Washington

Dear Sirs:

I am writing regarding the Forest Service proposal for land use in the Wenatchee National Forest. It was recently reported in the Newspaper that the "preferred alternative" was intensive timber production in the Kittitas planning unit.

I want to register my strong objection to intensive logging in this area. I have hunted, hiked, and flown over this area over the past 30 years and am intermittently familiar with all of the territory. I feel that only a minimum selective logging should be allowed in this area. There is a very slow regeneration of logged areas, particularly on the easternmost slopes. There has been an ideal wildlife and recreation balance with healthy elk and deer herds. I think any other aggressive logging will simply disturb that. Further roads will increase use to the detriment of the area.

WENATCHEE NF
AUG 2078

SUPR	RCS
[illegible]	ENG
PS	FIRE
[illegible]	LDSMNR
[illegible]	W-S
[illegible]	WS
[illegible]	A.WL
[illegible]	HLC
PROG	REM
LU PLN CRD	SCMS
TMR MGT.	DP
A. ZOOL	TL

Sincerely,

S. E. Harris

S. E. Harris, M.D.

SE

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
PO BOX C-3755
SEATTLE, WASHINGTON 98124

NPSEN-PL-ER

17 AUG 1978

John L. Rogers, Forest Supervisor
Wenatchee National Forest
Post Office Box 811
Wenatchee, Washington 98801

8

Dear Mr. Rogers:

We have reviewed the draft environmental impact statement for the Kittitas Land Management Plan, Washington, with respect to the U.S. Army Corps of Engineers' areas of responsibility for flood control, navigation, hydropower, and regulatory functions. We have no comments.

Thank you for the opportunity to comment on this statement.

Sincerely yours,

Sidney Knutson

SIDNEY KNUTSON, P.E.
Asst. Chief, Engineering Division

150

United States Department of the Interior
OFFICE OF THE SECRETARY
PACIFIC NORTHWEST REGION
500 N.E. Multnomah Street, Suite 1692, Portland, Oregon 97232

August 21, 1978

9

Mr. John L. Rogers
Forest Supervisor
Wenatchee National Forest
P. O. Box 811
Wenatchee, Washington 98801

Dear Mr. Rogers:

Thank you for the copy of the draft environmental statement for the Kittitas Land Management Plan, Washington. We appreciate receiving this material; however, all such documents should in the future be directed to the Office of Environmental Project Review in Washington, DC. That office is the "clearinghouse" for all Department of the Interior environmental impact statement activities.

For your convenience the address is:

Mr. Bruce Blanchard, Director
Office of Environmental Project Review
Interior Building, Room 4256
Washington, DC 20240

Sincerely yours,

Charles S. Polityka

Charles S. Polityka
Regional Environmental Officer

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Room 360, U.S. Courthouse, Spokane, Washington 99201

August 21, 1978

R. E. Worthington
Regional Forester
Pacific Northwest Region
319 S.W. Pine Street
P.O. Box 3623
Portland, Oregon 97208

(10)

Dear Mr. Worthington:

The Soil Conservation Service has reviewed the draft environmental impact statement for Kittitas Land Management Plan, Wenatchee National Forest.

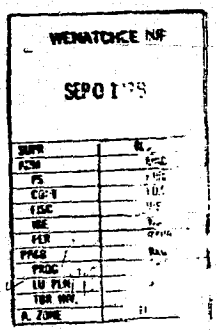
It appears the timber, range, wildlife, and soil resources have been adequately addressed and limitations of use recognized.

We feel it should be the prerogative of the public sector working with the USFS to make the decision on which is the most desirable management alternative.

Sincerely,

Richard P. Foster, Acting

Galen S. Bridge
State Conservationist



161

JOHN L. ROGERS, FOREST NORTHWEST
WENATCHEE N.F.
P.O. BOX 811
WENATCHEE, WASHINGTON 98801

FOX 331
GAFB, TX.
76703

(11)

DEAR SIR:

I HAVE STUDIED THE DRAFT ENVIRONMENTAL STATEMENT FOR THE KITTITAS PLANNING UNIT.

I THINK THE STATEMENT FULFILLS THE INTENT OF CONGRESS IN REQUIRING AN ENVIRONMENTAL STATEMENT.

I SUPPORT THE PROPOSED PLAN.

Joseph C. Schott

JOSEPH C. SCHOTT

WENATCHEE NF
SEP 12 '78

SUPR	RLS
ADM	ENG
PS	TIMB
CONT	LDMMN
FISC	WTR
IBE	WS
PLN	R&WL
PP&D	REC
PROG	TER
LU PLN	SOILS
TBR MGT.	DH
A. ZONE	TC

12

John Rogers, Forest Supervisor
Wenatchee National Forest
P.O. Box 811
Wenatchee Washington 98801

Dear Sir;

Re; Kittitas Land Management Plan.

The members of the North Central Cascades Mineral Association having reviewed the draft environmental statement have voted to advise you that we have no serious quarrel regarding the treatment of "mineral" in any of the alternatives proposed.

We do wish, however to be on record as having disagreed with two statements made in the draft regarding mineral.

1. A statement made on page 34. "The planning unit and vicinity has a record of past production of metalic minerals of much less than $1,000,000, almost entirely in gold from the East Subunit near Liberty".
I now quote from the first annual report by George A Bethune, first state Geologist. In 1890 he wrote, "the now famous Swauk, Peschastin and Cle Elum placers, all in Kittitas county----I may state that these have been worked continuously and with great profit from the days of their discovery. From the last three districts I have named, the outnut annually has approximated at least $100,000: indeed I believe this is an understatement. I finding it absolutely impossible to get any accurate data."

Gold prices during this period ranged from $7.10 per ounce to $26.67 with the majority of the sales at $14.25.
In studying our own individual claims and based on what records are available we believe the Swauk district alone produced very near $20,000,000, placer and lode valued at $35.00 per ounce.

2. Again on page 34, "While placer gold is widely distributed, the size of the resource is considered too limited to warrant commercial exploitation."
We have had many guest speakers at our meetings, geologists and other authorities on mining in the Swauk district and all seem to agree on a simple statement, "The Swauk district is about 10% prospected and about one tenth of one percent mined."
We agree completely with this statement.

I realize that these are not very serious disagreements but we do wish to be on record as having disputed them.

Respectfully

Wallace Mieras

Wallace Mieras, President
North Central Cascades
Miners association.

P.O. Box 56
Moxee City Wash 98936

152

MR. IRA L. SPRING
ROBERT W. SPRING

Bob and Ira Spring • photographers

MAIN OFFICE
10010 OLYMPIC VIEW DRIVE
EDMONDS, WASHINGTON 98020
206 776-4685

WENATCHEE NF
SEP 13 '78

SUPR	RLS
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TBR MGT.	DH
A. ZONE	TC

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September 7, 1978

Mr. John L. Rogers, Forest Supervisor
WENATCHEE NATIONAL FOREST
P. O. Box 811
Wenatchee, Washington 98801

Dear Mr. Rogers:

Thank you for the opportunity to review the Kittitas Draft Environmental Statement. I have the following comments:

Except for the part pertaining to hiking, I heartily concur with your preferred Alternate No. 2. Alternate No. 2 has a fair balance between wildlife and logging. I am also pleased with the proposed Research Natural Areas. However, I am concerned with the future of hiking and horse trails in this area. Hiking prospects should be greatly enhanced instead of decreasing 10 percent, for good trails in this area would help draw hikers and horsemen away from the more fragile areas of Wenatchee National Forest.

A good example is Trail No. 1388 along the crest of Manatash Ridge. This would be a very enjoyable trail for hikers and horsemen if motorcycles were prohibited. Then under the multiple use concept logging would be encouraged but made compatible with trails, just as the Forest Service has proposed planning the various timber sales to enhance the wildlife habitat and allow space for motorless hunting. Roads and logging could be planned to leave pleasant and challenging trails.

Sincerely,

Ira L. Spring

1

1. Please refer to the first comment in Letter 1.

Advisory Council on
Historic Preservation
1522 K Street N.W.
Washington, D.C. 20005

September 8, 1978

WENATCHEE NF
SEP 13 '78

SUPR	RLS
ADM	ENG
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LU PLN	SOILS
TBR IRV.	DR
A. ZONE	TC

14

Mr. John L. Rogers
Forest Supervisor
Forest Service
Wenatchee National Forest
P. O. Box 811
Wenatchee, Washington 98801

Dear Mr. Rogers:

This is to acknowledge your letter of July 31, 1978, forwarding the draft environmental statement for the proposed Kittitas Land Management Plan, Wenatchee National Forest, Kittitas and Chelan County, Oregon.

In accordance with a Memorandum of Understanding between the Forest Service and the Council, signed May 19, 1977, Forest Service land use plans such as "Unit Plans," "Resource Plans," and "Project Plans," when they do not specifically authorize land-disturbing activities, do not have an effect on properties included in or eligible for inclusion in the National Register of Historic Places, as defined in Section 800.8 of the Council's "Procedures for the Protection of Historic and Cultural Properties" (36 CFR Part 800). Pursuant to the Memorandum of Understanding the Forest Service will refer documents authorizing land-disturbing activities which affect cultural properties included in or eligible for inclusion in the National Register to the Council for review in accordance with the Council's Procedures. Because it appears that the Kittitas Land Management Plan does not authorize land-disturbing activities affecting cultural properties included in or eligible for inclusion in the National Register the Council has no comment to make at this time. For your information, a copy of the Memorandum of Understanding is enclosed.

Your continued cooperation is appreciated.

Sincerely yours,

Louis S. Wall
Assistant Director, Office of
Review and Compliance, Denver

Enclosure

The Council is an independent unit of the Executive Branch of the Federal Government charged by the Act of October 15, 1966 to advise the President and Congress in the field of Historic Preservation.

153

Department of Energy
Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208

OFFICE OF THE ADMINISTRATOR

In reply refer to: AJ

September 11, 1978

Mr. John L. Rogers
Forest Supervisor
Wenatchee National Forest
P.O. Box 811
Wenatchee, Washington 98801

15

Dear Mr. Rogers:

Per your request we have reviewed the Draft Environmental Statement for the Kittitas Land Management Plan and offer the following comment.

Please refer to the statement on page 39 which reads: "... any new transmission lines that are constructed on the Planning Unit within 20 years will occur within the limits of existing line rights-of-way." This statement is correct at the present time. However, unanticipated increases in electrical load growth could require expansion of existing corridors and/or development of additional corridors in less than 20 years. We suggest that these possibilities be recognized by amending the statement to read "...insofar as load flows, any new...."

1

WENATCHEE NF
SEP 15 '78

SUPR	RLS
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F&M	RSVR
P&EA	REC
PROG	TER
LU PLN	SOILS
TBR IRV.	DR
A. ZONE	TC

We appreciate the opportunity to review and comment on this draft.

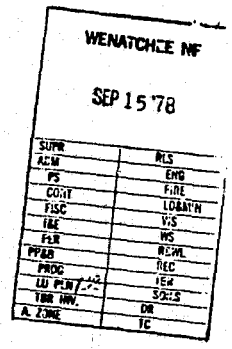
Sincerely,

E. Willard
Assistant to the Administrator -
Interagency Relations

1. This change has been made and appears on page 42 of the F.E.I.S.

Leonard Steiner
13239 N. E. 100th Street
Kirkland, Washington 98033

September 13, 1978



Mr. John L. Rogers
Forest Supervisor
Wenatchee National Forest
P. O. Box 811
Wenatchee, Washington 98801

16

Dear Mr. Rogers:

The section of the Cascade Crest Trail within the Kittitas Planning Unit is one of the most unsightly stretches because of the amount of logging that takes place in such close proximity to the trail. A timber sale has also been proposed in this section that would breach the trail with another logging road. We feel that the Forest Service should adopt a policy of trying to preserve some prescribed distance on each side of the trail in its natural state and that no more roads will be allowed to be constructed across the trail. The most vulnerable areas being Cascade Pass, Cady Pass, the section between Stampede Pass and Blowout Mountain, and Nachess Pass. If any of these roads are constructed, it severely lessens the wilderness experience of the trail users and brings too many people into these remote areas. The wildlife just can't stand the pressure.

(1)

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We are really in favor of the proposed management and natural areas, but we have some reservations about how this excellent policy for wildlife is put into practice.

The snag policy is excellent, but the hooker seems to be if they are a safety or fire hazard or represent a fire fuel on the ground. Technically, all snags could fall into that category. In the Wenas valley on Boise Cascade land, we noticed they had gone through and knocked down all the dead or dying trees in one section of land. Many of these trees had nest holes in them. One eight foot high stump was knocked over that was the only known nest site in the area for the pygmy nuthatch. This stump could not possibly have represented a fire or safety hazard.

(2)

This stump could not possibly have represented a fire or safety hazard. Unless data is gathered on these management units to really manage for wildlife and determine their needs, many nest sites such as this stump may get destroyed. An area showing good forest management practices is the first mile of the Lake Ethel Trail across Nason Creek by Merritt along the

1. The publication "The Pacific Crest Trail. Guide for Location, Design and Management" provides management direction for the Pacific Crest National Scenic Trail. Please refer to Page 32 for details of existing conditions and how they relate to the concepts in the "Guide", Appendix I.

2. The R-6 Snag Management Policy (Appendix F) was not intended to produce an even distribution of snags over every acre. Emphasis would be directed toward key habitat such as plant communities adjacent to water and natural openings. The minimum objective is to leave dead trees, both standing and down, in sufficient numbers to maintain primary cavity excavators in excess of 40 percent of their potential population capacity. This policy provides latitude to recognize safety and fire management coordinating requirements but certainly does not imply that all dead material would be removed.

Stevens Pass road. Here dead snags have been left with good regeneration taking place. However, with the reharvesting of this area, some new dead snags or potential snags will have to be left. We found hummingbirds repeatedly using dead snags as perch sites.

We feel it is extremely important to manage for nongame wildlife values if timber harvesting is going to be carried on in these areas. In connection with that, people must be managed to protect wildlife also. Many species will not tolerate human use of their area.

This plan represents some sound management practices, the "proof of the pudding" will be to see them put into practice. The past track record of the Forest Service has generally been to ignore wildlife needs when it comes to timber harvest. Let's hope the era has come where forest management takes precedent over resource extraction.

Thank you for the opportunity to comment on this E.I.S.

Sincerely,

Leonard Steiner

Leonard Steiner
Conservation Chairman
Seattle Audubon Society

155

PRODUCING DEPARTMENT—
WEST UNITED STATES
LOS ANGELES DIVISION
W. C. LENZ
DIVISION MANAGER

TEXACO INC
3050 WILSHIRE BOULEVARD
P. O. BOX 3250
LOS ANGELES, CALIF. 90051

September 14, 1978

KITTITAS LAND MANAGEMENT PLAN,
WENATCHEE NATIONAL FOREST,
STATE OF WASHINGTON

Mr. John L. Rogers
Forest Supervisor
Wenatchee National Forest
Box 811
Wenatchee, Washington 98801

17

Dear Mr. Rogers:

We have reviewed the Draft Environmental Statement (DES) covering the subject area and submit the following comments:

Texaco Inc. holds U.S. leases totaling 17,482 acres in Twps. 17, 18 North, Rges. 14, 15 East, of which approximately 9800 acres are National Forest lands. As set out on Page 37 of the DES an Environmental Analysis Report is required prior to any drilling on these lands.

The Environmental Analysis Report will provide adequate opportunity for establishing drilling and production stipulations to protect the Forest lands from any undue damage. We therefore recommend Kittitas Land Management Plan Alternative 1, and strongly oppose preferred Alternative 2.

Very truly yours,

KWB:ES

WENATCHEE NF

United States Department of the Interior

OFFICE OF THE SECRETARY
PACIFIC NORTHWEST REGION
500 N.E. Multnomah Street, Suite 1692, Portland, Oregon 97232

October 23, 1978

ER-78/887

Mr. John L. Rogers
Forest Supervisor
Wenatchee National Forest
P. O. Box 811
Wenatchee, Washington 98801

18

Dear Mr. Rogers:

We have reviewed the draft environmental statement for the proposed Kittitas Land Management Plan on the Wenatchee National Forest. The following comments are provided for your consideration when preparing the final document.

General Comments

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The DES is programmatic and lacks sufficient detail on how proposed management practices, particularly timber harvest and road construction, will affect the recreation environment. The specific nature and extent of impacts should be presented in the final statement unless there is assurance these concerns will be treated in future project-level environmental assessments.

Overall the plan contains consideration for wildlife values. We suggest, however, that more specific reference to possible impacts on fish be incorporated into the main body of the document. In addition, consideration should be given to any effects that the plan would have on instream flows for fish in the Yakima River system.

(1)

We are particularly concerned about the adverse impact of the construction and use of new roads on fish and wildlife and their habitat. Studies in the Blue Mountains (Perry and Overly, 1977) by the Washington Department of Game demonstrate significant adverse effects of roads on use of good habitat by deer and elk. These effects should be recognized in the ES where applicable. They include: (1) Main roads through meadows caused a reduction in big game use of more than 95 percent from road edge to one-half mile away. (2) Secondary roads through meadows reduced deer use 62 percent and elk use 44 percent to one-eighth mile from road edge. (3) Main roads through the open forests reduced elk use 46 percent from road edge to one-half mile away. (4) Secondary roads, in open forest, reduced

1. This has been done in the "Effects" section on page 67-105 and on page 134.

elk use 67 percent from road edge to one-half mile away. (5) All roads in the study area caused a significant reduction in elk use of adjacent habitat.

We are aware of your inclusion in the document of research information from your LaGrande office. For added information we include guidelines for location of roads from the previously cited Department of Game studies. Use of the guidelines when planning construction, improvement, or closures of roads in big game habitat areas would significantly minimize the influence of newly constructed roads, or improvements on existing roads on deer and elk, and maximize road closure benefits for these animals.

Guidelines for Road Location

1. Meadows and open brush or grasslands should be avoided by at least one-eighth mile. This one-eighth mile buffer strip should contain dense or open forest vegetation but have enough density to adequately hide a deer or elk and screen road noise and activities from the meadow. On south and west slopes, meadows should be avoided by one-half mile.

(2) 2. Roads through open forest have a negative impact on elk use in adjacent habitats but do not seem to affect deer. Therefore, roads through this type in elk management areas should be located primarily on east or level sites to minimize their impact. Roads located in open forest on north slopes would not reduce elk use on adjacent habitats to the extent of roads on west or south slopes.

3. Dense forest types provide a screening effect from road noise and activities. Therefore, roads located in dense forest habitat cause minimal reduction in deer or elk use on any slope.

Specific Comments

Summary Sheets iv and v. Two tables (RARE II Management Allocations and Summary of Alternatives) lack real meaning because they list management areas without definition. We suggest adding a brief description of objective after each management type; e.g., "Management Area A--Production of maximum wood fiber and forage," etc.

(3)

Pages 12 and 13, Land Ownership Adjustments. Lands proposed for ownership adjustments should be identified on map(s) and described in more detail with respect to acreages, potential uses, and probable methods of acquisition.

(4)

Page 14, Historical. There are no Indian trust lands or communities that will be directly impacted by the preferred alternative. However, we suggest that the following information be inserved in Section 5, Historical Background, between the first and second paragraphs:

(5)

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2. These are good guidelines for areas on the Kittitas Unit that are currently undeveloped.

3. These tables do not appear in the F.E.I.S.

4. The preliminary agreements list only ownership adjustment target areas. All firm land adjustment proposals will be analyzed through the NEPA process. This will include detailed maps, acreages. etc.

5. This information was added to the Historical Background section on page 14.

The unit lies within the area ceded to the U. S. Government by the Yakima Indian treaty dated June 9, 1855. Article 3 states as follows:

> ...as also the right of taking fish at all usual and accustomed places, in common with the citizens of the territory, and of erecting temporary buildings for curing them; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclained land...

These rights continue to exist and should be considered in management of the unit.

An overlay which indicates the west boundary of the ceded area is attached. It fits the base maps provided in the back of the draft environmental statement.

(6) Page 14, Historical, last paragraph. The first sentence contains a mistake: The treaty mentioned was concluded on June 9, 1858 (not 1885), and ratified by Congress on March 8, 1859.

(7) Pages 16-17, Soils. Areas having steep slopes and high erosion hazard should be indicated on maps in the FES, along with acreages and a more specific treatment of management implications and impacts.

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Pages 17-19, Water. The statement should at least summarize the occurrence of ground water and indicate what use is made of ground water resources. If ground water is used for recreational facilities, the statement should indicate steps taken to protect the quality of ground water for human consumption, including policies concerning sanitation facilities. Impacts of ground water on land stability, if any, should (8) be discussed. The influence of ground water seepage on base flow of streams should be addressed. Water quality monitoring measures should be considered in order to adequately assess long-term effects of increased management activities on both surface water and ground water resources.

Page 18, Flow Control. It is correctly indicated that there are no hydroelectric sites within the planning unit. However, we note that there are several sites which appear to be topographically suitable (9) for water storage. These sites are listed and a rough estimate of storage potentials is given in the enclosed table.

Page 26, Threatened and Endangered Species. It is not enough to state that "no known threatened or endangered wildlife or plant species occur (10) on the unit." Some indication of ongoing and future studies to discover such use should be given. The American Bald Eagle is listed in

6. This correction was made, page 15.
7. This data is available for review at the Wenatchee Forest Supervisor's Office.
8. A section on ground water has been added on page 18.
9. These sites have been included as potential sites in the section on Flow Control, page 19.
10. This change has been made, page 27.

Appendix G-12 as an endangered species and a possible occasional user of the area. The presence of bald eagles in the area is also noted on page 22 as being "occasionally seen along river bottoms." In Washington the American Bald Eagle is now officially listed as "threatened." The Fish and Wildlife Service's Bald Eagle Management Guidelines are attached for your convenience.

(11) Pages 28-29, Roads and Trails. Eighty-five percent of the trail mileage in the planning unit is open to ORV use, and the final statement should discuss whether this represents an imbalance in meeting the needs of motorized and nonmotorized recreationists.

(12) Pages 32-33, Visual. The presence of contrasting management on intermingled private lands along the Pacific Crest Trail is given as a reason for lowering visual quality objectives on national forest lands to "Modification." We believe this could result in lowering the recreational experience along this segment of the trail. Therefore, we suggest the Forest Service consider acquiring private lands along the trail or working with private landowners to upgrade visual appearance.

(13) Page 40, Wilderness, etc., (RARE II). The subject matter of this section covers RARE I, not RARE II.

(14) Pages 42-43, Roadless Areas. Descriptions of the two roadless areas should give their wilderness quality ratings and compare these to other selected and nonselected areas.

(15) Page 48, Research Natural Areas, paragraph 3. Change "Bureau of Sport Fisheries and Wildlife" to "Fish and Wildlife Service."

(16) Page 50, Constraints, paragraph B-4 (see also page 53, paragraph 1). We would caution that the constraint (limitations placed on management options for an area by law, policy, or economics) of preserving endangered, threatened, and unique species that use the unit is hollow without detailed knowledge of their occurrence as derived from intensive field studies. Such studies should be directed at these species and not left to happenstance encounters of an employee in the woods, or old publications or records.

(17) Pages 56-89, Effects of Implementation. The final statement should contain a more quantified, detailed discussion of impacts expected from the preferred alternative on the recreation environment. Impacts of other alternatives could be less detailed and could be given relative to those of the preferred alternative. Of the proposed management activities, timber harvesting and road construction can be expected to exert the greatest impacts; and the nature and extent of these should be described in greater depth. Where quantification is not possible, the FES should estimate probable impacts in as definitive terms as present knowledge will allow.

11. This has been noted, page 31.

12. Land acquisition does not appear to be feasible at this time. This option is always open, however. Management of the Pacific Crest National Scenic Trail in this section of intermingled private ownership will conform to the Management Guidelines for the PCNST as discussed in the Final Environmental Statement. Trail maintenance activities such as slash cleanup, signing, etc., will be stressed.

13. This typographical error has been corrected.

14. The RARE II Wilderness Attribute Rating for the Naneum and Lion Rock roadless areas was 17 and 16 respectively. Ratings for all roadless areas in Washington ranged from a low of 9 to a high of 26. Naneum and Lion Rock were well outside of the top third in terms of rating. The reader should refer to the Washington Supplement to the Draft Environmental Statement on RARE II for more detailed information.

15. This change was made on page 46.

16. Whenever possible field studies are being conducted through cooperative efforts, appropriated funds or other means.

17. This has been done where possible. In some instances the suggested changes are beyond the scope of this Plan and will be addressed in the Wenatchee National Forest Land and Resource Plan (National Forest Management Act of 1976).

With respect to timber management, the impacts of each intended harvest method and other practices on major recreation activities and on scenic values should be described. An estimate should be given of the acreage expected to be impacted by each harvest method. Locations and timing of future timber sales should be estimated to the extent possible. The discussion of harvest impacts should indicate estimated recovery times for major recreation activities.

The estimated mileage of roads to be constructed and reconstructed should be given by construction standard. Timing and location should be indicated. Implications of the different construction standards and of terrain and soil conditions along specific new construction routes should be described with regard to impacts on recreation, scenic values, erosion, and stream sedimentation.

The conversion of roadless areas to multiple use has been one of the most controversial aspects of Forest Service management. Road construction, logging, and other management practices can be expected to exert greater impact in roadless areas than on land already under multiple use because the degree of change will be greater. The preferred alternative will convert all or portions of existing roadless areas, which total 19,700 acres, to other uses. The extent and nature of planned conversions is unclear in the DES. Roadless areas should be indicated on map(s) in the final statement, together with a disclosure of areas and acreages to be impacted by conversion to other uses. Probable impacts from management activities as discussed above should be discussed separately for roadless areas.

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We suggest the FES discuss the following mitigation measures and the extent to which they will be employed: construction of roads to minimum standards, closure of roads to motorized vehicles when no longer needed for commodity production, use of closed roads as trails, and use of environmentally sensitive road design. (18)

With respect to visual resource management, the DES does not convey a clear impression of: areas selected for retention and partial retention objectives (which roads, streams, etc.), widths of areas along roads and streams, how these areas will appear after treatment, and methods of timber harvest and slash disposal. This should be clarified in the final statement. We suggest the use of photographs to illustrate each visual management objective and inclusion of a map for the preferred alternative showing areas under each visual resource management objective.

The DES gives expected changes in recreation use by activity and alternative, but details of planned facilities are not given. The FES should contain a more specific, quantitative discussion of probable impacts on recreation facilities. We suggest an estimate of the number of camp and picnic units and other facilities that would be developed, redeveloped,

18. A section addressing such mitigation measures has been included in the Final Environmental Statement and is on pages 133-136.

or closed under the preferred alternative. The final statement should indicate priorities for recreation expenditures, the expected level of recreation financing, and intended levels and priorities for maintenance.

Pages 60 and A-3, Management Area B. The permissible uses by domestic livestock and off-road vehicles are apparently in conflict with the management prescription for Management Area B. The objective here is said to be maintenance of optimum cover-forage conditions for big game (particularly elk) on winter range. Yet these two directly competing uses would be permitted. No rationale is given as to why the primary objective needs to be jeopardized in this way. (19)

Pages 73-74, Recreation, Undeveloped Areas, and Roads and Trails. The DES under these headings speaks of roads in Management Areas C and D. If roads are to be constructed in these areas, the final statement should be specific as to the construction standards, extent, location, purpose, and implications of these roads for recreation. (20)

Page G-5, Birds. The common nighthawk is listed as a wildlife species regulated by the Washington Department of Game. In what way is this non-game, insectivorous species regulated? (21)

Page G-6, Birds. The spotted owl is not included in the life form list; however, it is included on page G-11 as an indicator species in the Wenatchee National Forest. (22)

Page G-10, Birds. The great horned owl should be added to the list of species dependent on dead and defective trees. (23)

Page J-5. The heading "Bureau of Land Administered Segments" should be changed to "Bureau of Land Management Administered Segments." (24)

Summary Comments

It should be noted that the proposed project may be subject to permits for which we have review responsibilities. Accordingly, our comments do not preclude an additional and separate evaluation by the Fish and Wildlife Service pursuant to the Fish and Wildlife Coordination Act (16 U.S.C. 661, et seq.), if eventual project development requires a permit such as a section 404 permit (P. L. 92-500). In review of permit applications, the Service may concur, with or without stipulations, or object to the proposed work, depending on specific construction practices which may impact fish and wildlife resources.

Thank you for the opportunity to review and comment on this document.

Sincerely yours,

Charles S. Polityka
Regional Environmental Officer

Enclosures (3)

19. We do not believe that off-road vehicle use and livestock grazing in Management Area B are in conflict with the objective of maintaining optimum forage cover conditions for big game. These areas are very limited in size and the ORV and grazing use that occurs there is minor. Any use conflicts or competition for forage that may develop would be resolved in favor of maintaining optimum big game habitat.

20. This change has been made. The revised strategies are more explicit. See pages 52-65.

21. The notation was removed from page F-5.

22. This species has been added to page F6 in the appendix.

23. The great horned owl was left off the list because it is not heavily dependent upon dead or defective trees.

24. This has been change on page I-5.

BLACK HILLS AUDUBON SOCIETY

A Washington State Chapter of the National Audubon Society
Office: Suite 12, 108 W. 22nd Ave., Olympia, WA. • Mailing Address: P.O. Box 2524, Olympia, WA. 98507
Phone (206) 357-4664

18 September 1978

19

Mr. John I. Rogers
Forest Supervisor
Wenatchee National Forest
P.O. Box 811
Wenatchee, Washington 98801

In re. Alternatives for the Kittitas Land Management Plan

Dear Mr. Rogers:

It is the opinion of this organization that Alternative Plan No. 5 is the most desirable for the management of the areas in question.

We thank you for the opportunity of expressing our opinion on this matter.

Sincerely,

BLACK HILLS AUDUBON SOCIETY

J. M. Peterson
Conservation

WENATCHEE NF	
SEP 19 '78	
SUPR	RLS
ADM	ENG
PS	FIRE
COMT	LD&MIN
FISC	VIS
I&E	WS
FLR	R&WL
PP&D	REC
PROG	I&R
LU PLN	SOILS
TBR INV.	DR
A. ZONE	TC

162

20

SILVA TREE MANAGEMENT
4419 PACIFIC HIGHWAY E.
TACOMA, WASH. 98424

TIMBER APPRAISALS — FOREST CONSULTANT

SILVA TREE & LAND MANAGEMENT

September 19, 1978

Mr. John L. Rogers
Forest Supervisor
Wenatchee National Forest
P.O. Box 811
Wenatchee, Washington 98801

Dear Mr. Rogers,

I would like to comment on the Wenatchee National Forest land management plan. I would choose alternative number 2 which provides for high production of commodities while also emphasizing land allocation providing recreation opportunities and maintenance of Elk habitat. Thank you for the opportunity to comment.

Sincerely,

N. Roger Scott
Forest Consultant

NRS/rma

WENATCHEE NF	
SEP 20 '78	
SUPR	RLS
ADM	ENG
PS	FIRE
COMT	LD&MIN
FISC	VIS
I&E	WS
FLR	R&WL
PP&D	REC
PROG	I&R
LU PLN	SOILS
TBR INV.	DR
A. ZONE	TC

Cle Elum Chamber of Commerce

SERVING: Cle Elum, Roslyn, Ronald, South Cle Elum and Easton

P.O. Box 43
CLE ELUM, WASHINGTON 98922

September 25, 1978

21

Mr. John Rogers, Forest Supervisor
Wenatchee National Forest
P. O. Box 811
Wenatchee, WA 98801

Dear Mr. Rogers:

The Cle Elum Chamber of Commerce has long advocated that Forest Service lands should be managed in the most efficient manner to provide the payrolls, recreational advantages, and conservation of natural resources. With this philosophical approach to better maintain a multiple use concept, we urge the Forest Service to discontinue studies for or designation of additional land in Kittitas County as Wilderness Area.

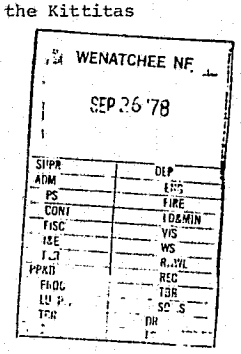
The Cle Elum Chamber of Commerce endorses an overall balanced land use plan, and does recommend Alterative No. 2 of the Kittitas Planning Unit. This plan will most nearly advance the objectives of the Chamber of Commerce. Alternative Plan No. 2 creates a comprehensive management unit with resources based on merit and no single use is established as a dominant factor.

The Cle Elum Chamber of Commerce would again reaffirm its position that lands within Kittitas County be administered with the widest range of activities so as to enhance the betterment of all who reside within the County.

Thank you for the opportunity to comment on the Kittitas County Planning Unit.

Sincerely,

DARREL ELLIS, President
Cle Elum Chamber of Commerce



(22)

1112 Madison
Wenatchee Wa.

Dear John, et al, 10/29/78

A few comments on the Kittitas D.E.S.

The effort is commendable for the consideration of wildlife and recreational values. I do have some concerns and recommendations to share with you. Lets use the preferred alternative 2 as a base:

1. Management area A on Table Mtn. should contain mgt. area E considerations similar to Alternative 5. There should also be some some area allocated to "E" in the West unit.

2. While roadless area will exist in this alternative it will exist because a commodity use doesn't find the area desirable. I believe that land use planning should be the basis for designating areas that are suited and ~~beneficially~~ should be designated as roadless. Some area in both units should be identified for a roadless future.

3. ORV use and a road management program recieve minimal discussion in the planning effort. I presume the feeling is that the ORV plan makes further

1. Management Area E allocations are displayed in Alternatives 3 and 4. The preferred Alternative will maintain areas of old growth habitat by other means including streamside zones, Management Area D, etc.

2. Much of Management Area D for practical purposes will remain roadless in presently unroaded areas.

(3) consideration unnecessary in this effort but I strongly disagree. The condoned resource deterioration and wildlife habitat conflicts occuring in the head of the Tarsem, on both sides of the Wenatchee and the vicinity of Blowout and Cliffy is inexcusable.

Road management for wildlife is mentioned but what is the proposed action? Is a program outlined and time table set? This direction is properly a part of land use planning.

4. Fire and residue management: It would seem pertinent to get specific about areas (4) where prescribed burning will be done and areas where a varying intensity of fire control activity will be taken according to weather conditions and land values.

You know Fellas, statements such as Item 6-A-11 that "Off-road vehicle use may be restricted in elk calving or deer fawning areas during the spring months". really dont do much to convince me that the forest is actually into wildlife management!! Sorry - but lets see something concrete for direction!

Regards

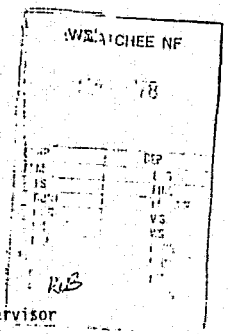
Archie Mills

3. Forest Service policy is that "All National Forest system lands outside of the National Wilderness System are available for dispersed vehicular recreation use unless restrictions or closures are established through the continuing resource planning process. Recreation vehicular travel is a recognized part of outdoor recreation."

   It is the objective of the Forest Service "to provide quality dispersed off-road vehicular recreation opportunities, for people, that are relatively safe, enjoyable and perhaps challenging; provided that this activity is or can be made compatible with other dispersed recreation activities and other resource uses and meet land use planning objectives."

   Identified resource deterioration and wildlife habitat conflicts will be solved on a project basis. The Wenatchee ORV Management Plan includes the means for annual update of closures or restrictions to accomplish this and meet land use planning objectives.

4. This is being accomplished. The criteria for making these decisions are currently being developed. Specific direction will appear in forthcoming Wenatchee National Forest Land and Resource Plan under the guidelines of the National Forest Management Act of 1976.



P. O. Box 2224
Renton, WA 98055

Mr. John L. Rodgers, Supervisor
Wenatchee National Forest
P. O. Box 311
Wenatchee, WA 98801

September 26, 1978

23

Dear Mr. Rodgers:

The Wandering Willys Jeep Club of Renton, Washington, has reviewed the Kittitas Land Management Plan and would appreciate your considering the following comments on the management proposals for this area. We are very disappointed that the Forest Service relegated off-road vehicle use to the position it did in the development of this land management plan. Some of our club members have "jeeped" in several of the areas in this land management plan since the early 1950's. Collectively our club members know hundreds and perhaps even thousands of 4 wheel drive participants who travel the off-road vehicle trails in the Liberty-Lions Rock area and the Taneum-Manastash area. Many of the clubs in the Pacific Northwest Four Wheel Drive Association spend several weekends a year in one or both of the units of this land management plan. Frankly, it is our feeling that if the Forest Service considers the off-road vehicle use in this area to be moderate, then there is no place in the country where off-road vehicle use would be considered heavy. We strongly recommend that you reconsider your stance on the importance of off-road vehicle use in this planning area. It may be the largest single recreational pursuit in this area in terms of annual visitor days, exceeding even elk hunting by a large margin, especially when the "General" recreation categories shown on page 28 probably include off-road vehicle uses.

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(1)

We are also concerned with the "Roadless" category given the Lions Rock area. In our opinion the Forest has stretched the interpretation to a maximum in including this area. Many of the off-road vehicle trails were "constructed" as logging roads and a high percentage of the area has been logged.

(2)

Based upon the information that you have furnished us, we have concluded that alternative 1 is the plan that we would prefer to see implemented for this area. From a realistic standpoint, the limitations that would be imposed upon forest management activities under other alternatives are probably very short sighted in view of the trend in commodity demands. While we would prefer to drive through uncut virgin forests we do not believe we can sustain that position with any long term credibility. Thus we have concluded that the alternative that would maximize commodity management in this area is one that we would be most comfortable with. We see little reason why that management cannot be implemented and still sustain or improve the game management and provide the off-road trails we seek.

1. The recreation figures on page 28 of the Draft were derived from Forest Service RIM statistics for calendar year 1976 and represented our best estimates of current usage. We concur that ORV use is an important activity in the Planning Unit but disagree that it constitutes the "largest single recreation pursuit in this area." Emphasis on providing dispersed recreation opportunities, including ORV use, is an evaluation criteria against which all Alternatives were weighed. We believe that the proposed Alternative will maintain existing and enhance future ORV opportunities.

2. This area is also listed in the RARE II Draft Environmental Statement for WAshington. This area and ..aneum met at least the minimum criteria for inclusion. The January 4, 1979, decision for the Roadless Area Review and Evaluation (RARE II) process allocated both areas to non-wilderness management.

We have no strong feelings one way or the other regarding the need for winter range management in the area as most of the area falls above the elk winter range anyway. We do not support the continuation or creation of a Taneum Lakes natural area since no reason for its presence is indicated.

Thank you for giving us the opportunity to review this land management plan and to comment on its content.

Sincerely,

WANDERING WILLYS JEEP CLUB

By Patricia G. Carter
President

Members in Support of this Position:

Sharyl Allen
Kara D. Brown
Allan H. Carter
Maralee J. Carter
Steve Heimann
Nellita Myers
Linda Olson
Kay A. Heimann
Vincent K. Layton
Judith L. Layton
Richard Shipengrant
Jerry A. Porter
Karl E. Eibes

167

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY
Olympia, Washington 98504 206 753 2801

PV-11

September 20, 1978

Mike Mills
Washington State Office of
Financial Management
101 House Office Building
Olympia, WA 98504

24

Dear Mr. Mills:

The Department of Ecology has completed its review of the U. S. Forest Service's draft environmental impact statement on its Kittitas Land Management Plan.

We have no specific comments but would be pleased to consult with the Forest Service on water quality issues if they so desire.

Sincerely,

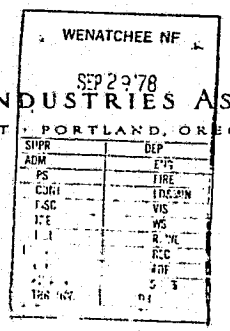
T. L. Elwell
Environmental Review Section

TLE:bjw

cc: Don Beery

WESTERN FOREST INDUSTRIES ASSOCIATION
1500 S.W. TAYLOR STREET · PORTLAND, OREGON 97205
TELEPHONE
503-224-5455

Sept. 26, 1978



25

Mr. John Rogers, Forest Supr.
WENATCHEE NATIONAL FOREST
P.O. Box 811
Wenatchee, Wn. 98801

Dear Mr. Rogers:

Thank you for the opportunity to respond to your Kittitas Land Management Plan Draft Statement. We are somewhat confused with your statement on Page 73, Recreation and Undeveloped Areas.

In your descriptive analysis of Recreation, you state, "....Developed recreation will remain at present levels. This alternative provides the most area for unroaded recreation activities." (Underlining my own). Then in the next paragraph, on Undeveloped Areas, "This alternative does not recommend retention of any acres to roadless management." How can you have the most area for unroaded recreation without retaining some acres to roadless management?? Also, you designate 2,700 acres under Management Area C, which is the management prescription to maintain optimum elk cover requirements and conditions that offer opportunities for unroaded big game hunting. These area designations should be clarified. (1)

We noticed in your Alternative I discussion, Page 69, Timber and Vegetation, you state, "...This alternative is lost in potential for maintaining vegetative cover. ..." We presume when you refer to vegetative cover in this paragraph, you are referring to the timber over-story rather than vegetation in the broad sense. It has always been accepted that in most timber stands the selective removal of timber over-story and the dead, diseased mortality generally increase the amount of lower vegetation. In most cases, this type of vegetation is beneficial to the wildlife species except possibly the wildlife species that require habitats of dead and down trees. (2)

We presume, even though no reference is made, that intensive management on the areas supporting potential timber production will be conducted in Alternative 2. (3)

On Page 75, Alternative 2, Land Adjustments, you make reference to"retracting from Cahin Cr. Area, T20N; R-13E, W.M. and T20N, R-14E, W.M.; and consolidate National forest ownership in Management Area D and retain National forest lands in other management areas." It appears there is not sufficient lands available in your retractions from T20N R13 E, W.M. and T20N R 14E, W.M. to compensate the private owner in your consolidation of lands in Management Area D. If you are planning on acquisition by purchase, then it would appear that new appropriations need to be discussed in this draft. If the land is by exchange with private land outside the Kittitas Land Management Plan, then these areas need to be identified and the impacts will need to be discussed in this draft or in its future supplements. (4)

This office, because of these unspoken to issue and/or unclarified discussions, must support your Alternative I.

Very truly,
Bob Platz

BP:aa

168

1. We have changed some of the wording to clarify this.

2. This paragraph refers to the maintenance of existing vegetation and vegetative disturbance.

3. All Alternatives, including Alternatives 2 and 7 contain substantial areas allocated to Management Area A. Intensive management of the timber resource with consideration of other resources is prescribed in this Management Area.

4. The sections on land adjustments have been revised to make them more understandable. However, it should be noted that the carrying out of a land adjustment program in this area would involve a detailed analysis through the NEPA process. The means and methodology of acquisition or retraction would be determined at that time. It could well be that National Forest or private lands outside the Planning Area would become involved. At this time we are not able to identify which lands these might be.

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION X
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

WENATCHEE NF
SEP 2 '78

REPLY TO ATTN OF: M/S 443

SEP 2 2 1978

John L. Rogers, Forest Supervisor
Wenatchee National Forest
P. O. Box 811
Wenatchee, Washington 98801

26

Dear Mr. Rogers:

We have completed our review of your draft environmental statement for the Kittitas Land Management Plan and would like to submit the following comments for your consideration.

The statement presents lengthy descriptions of the management objectives, inventories of wildlife and potential timber yields, and detailed maps of the various alternative management schemes, but fails to discuss (in quantitative terms) the existing environment or the impacts of implementing the preferred alternative.

Section V, Effects of Implementation, discusses the environmental effects of the preferred alternative in terms of "potential for maintaining existing soil conditions" and "potential for maintenance of (1) water quality". The final EIS should present the existing soil distribution (types, slopes, and erosion characteristics) and the amount (2) of sediment transport expected from the increased level of road construction. The final EIS should also define (on maps) the location of new road construction in such a way as to allow EIS reviewers the opportunity to determine the effects of such construction upon nearby streams and wildlife areas. This section also suggests that some degree of stream water degradation is expected; therefore, the final EIS should present (3) a comparison between: 1) existing water quality of streams, 2) state water quality standards, and 3) expected water quality after implementation of the preferred alternative.

In addition to presenting the above-mentioned environmental effects, (4) the final EIS should define the mitigative measures to be exercised to reduce or eliminate the degradation of stream water quality and roadside construction effects.

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1. & 2. Maps of the existing soil distribution are available for review in the Wenatchee National Forest Supervisor's Office. Estimates of the amount of sediment transport expected from the increased level of road construction are beyond the scope of this Plan as are projections of future road locations.

3. These statements are on page 19, #-4 and page 104.

4. Mitigative measures that will be exercised to reduce or eliminate degradation of the water quality of streams were added in the text under Mitigation on pages 133 and 134.

From the standpoint of the Environmental Protection Agency's area of concern and expertise, we are rating this statement LO-2 (LO - Lack of Objections; 2 - Insufficient Information). This rating will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions under Section 309 of the Clean Air Act, as amended.

We appreciate the opportunity to review this draft environmental impact statement. Please do not hesitate to contact me or Dennis Ossenkop, of my staff, should you have questions or desire further information regarding our comments. We can be reached at (206) 442-1285 or (FTS) 399-1285.

Sincerely,

Alexandra B. Smith

Alexandra B. Smith, Chief
Environmental Evaluation Branch

170

Kittitas County Field and Stream Club

ORGANIZED IN 1927 - INCORPORATED IN 1946

Affiliated With Washington State Sportsmen's Council, Inc.

P.O. BOX 522

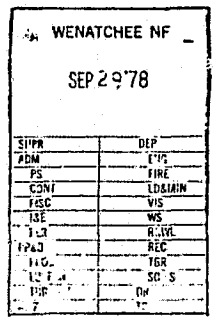
ELLENSBURG, WASHINGTON

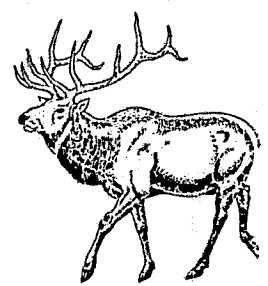
27

Dear Sirs;

The membership of the Kittitas Field and Stream Club recommend adoption of Alternative 2 of the Kittitas Land Management Plan for the Wenatchee National Forest.

Sincerely,
Gilbert Hansen



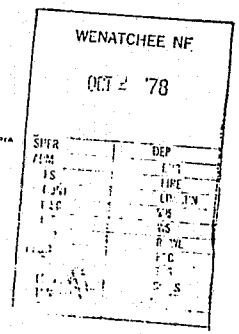


The Mountaineers

Seattle, Washington 98101
719 PINE STREET

28

BRANCHES AT TACOMA, EVERETT AND OLYMPIA



September 27, 1978

Mr. John L. Rogers
Forest Supervisor
Wenatchee National Forest
P.O. Box 811
Wenatchee, Washington 98001

Re: Kittitas Land Management Plan

Dear Mr. Rogers:

As President of The Mountaineers I would like to comment on the Draft Environmental Statement for the Management Plan for the Kittitas Planning Unit. As you know, The Mountaineers have many activities within the Wenatchee National Forest and we have a ski lodge in close proximity to the Kittitas Planning Unit at Stampede Pass.

We would like to compliment you on the Draft Environmental Statement, which is informative and well presented. The maps which are included are very helpful in analyzing the various alternative proposals. We note after reviewing this material that we do not have many recreational activities within the Planning Unit. On the other hand, the area is popular for big game hunting and dispersed recreation. We therefore support the Forest Service preferred alternative which achieves high timber production together with maintenance of big game habitat. Since much of the Planning Unit is visible from the highway we urge careful attention to the visual constraints as outlined in the Draft Statement to minimize adverse visual impact to travelers on the highway.

Thank you for this opportunity to express our views.

Very truly yours,

THE MOUNTAINEERS

James S. Sanford,
President

JSS:pl

. . . TO EXPLORE, STUDY, PRESERVE, AND ENJOY THE NATURAL BEAUTY OF THE NORTHWEST . . .

171

John J. Hanson
Route 2, Box 58
Cle Elum, Wash. 98922

September 29, 1978

John L. Rogers, Forest Supervisor
Wenatchee National Forest
P.O. Box 811
Wenatchee, Washington 98801

Re: Kittitas Draft Environmental Statement

29

Dear Mr. Rogers:

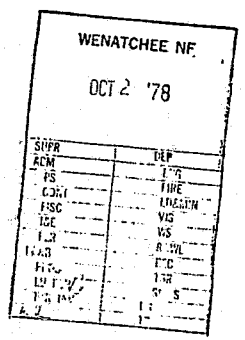
After reading your Kittitas Land Management Plan I must conclude that alternative 6 is the only acceptable alternative provided. Kittitas County needs are being met adequately under the present level of management which may even now be excessive.

Planning, at best, is something less than an exact art. It is often, if not always, dominated by political considerations and emotionalism and seems to provide more agravation and conflict than demonstrable benefits.

Therefore I would prefer to see a decline rather than an expansion of present levels of control on all public lands in Kittitas County. The adoption of Alternative 6 would represent a pause in the ongoing thrust of planning in this county and while short of a turn around at least it is not another step in the wrong direction.

Sincerely,

John J. Hanson



3700 E. Marion St.
Seattle, WA 98122
September 29, 1978

John L. Rogers, Forest Supervisor
Wenatchee National Forest
P.O. Box 811
Wenatchee, Washington 98801

30

Dear Mr. Rogers,

Thank you for sending me a copy of the draft environmental statement for the Kittitas Land Management Plan. My family and friends have grown to appreciate the many natural values of the Planning Unit through numerous visits for hiking and cross country skiing.

Alternative No. 5 would be the best management in view of the relatively small size of the two sub-units. Plan 5 will not further reduce the wildlife habitat and will retain the two undeveloped areas identified for Wilderness Study in RARE II. The speed with which our natural heritage has disappeared is well documented. Maintaining biological diversity for future generations should be one of the highest priorities of the USFS. This important long-term benefit can be accomplished through Alternative 5 while at the same time allowing wood fiber production from acreage equal to 92 percent of that in Management Area A of the preferred alternative.

172

(1) One inconsistency is misleading in the draft report: in the table on page v (Summary of Alternatives), No. 5 shows zero acres for recreation (Management Area D). This makes it appear to be an extreme position--as if no recreational use is to be permitted besides elk hunting. Then on page 85 the discussion of Recreation under Alternative 5 says that, with the exception of CRV opportunities in the study areas, existing recreational activities will continue at the same level as present, and "This alternative offers the greatest opportunity for a fairly extensive area suitable for unroaded recreation".

In the preferred alternative 2, Management Areas C and D are about the same size (subtracting the RARE II acreage). I should think listing about 13,000 acres as Management Area D (Recreation) under Alternative 5 would not be a great change and would provide a more accurate and attractive portrayal of the latter alternative.

(2) Another question arises as to the meaning of Management Area C. Page 61 says the purpose is to provide elk cover and opportunities for "unroaded big game hunting". Page 73 under "Recreation" refers to Management Area C as one of the increased opportunities for "dispersed roaded recreation including hunting". These confusions should be cleared up in your final plan.

I urge that the final plan reflect the land and resource allocations of Alternative 5.

Sincerely yours,

Joan Scott

1. Alternative 5 did not allocate any land to Management Area D. Therefore, there is no entry in the second table. It does not mean that there will be no recreation in the Alternative. Resource outputs for recreation were shown in the upper table on page v of the D.E.S. It would be possible to formulate another Alternative similar to Alternative 5 for the East Subunit and Alternative 2 for the West Subunit. However, the main issue in this Alternative is Management Area F and the RARE II areas.

2. This has been done in the Final Environmental Statement, page 55.

23102 S. E. 53rd St.
Issaquah, WA 98027

31

Mr. John Rogers, Supervisor
Wenatchee National Forest
P. O. Box 811
Wenatchee, WA 98801

Dear Mr. Rogers:

We have reviewed the Kittitas Land Management Plan Draft Environmental Statement and are thoroughly disappointed with its content. ~~We believe the Draft Environ~~mental Statement is insufficient because it presents much inadequate and undocumented data and contains many assumptions that appear to be little more than an opinion of the planning staff.

We are also especially concerned with the minimal consideration that off-road vehicles were given in this planning effort. In our viewpoint, off-road vehicle use is one of the more important uses in this land planning area and it seems to have been virtually overlooked. Our feeling is based upon a familiarity with the area from our hunting, camping, fishing and 4 wheel drive experiences that go back for over 20 years. We sincerely believe that there is almost equal importance between elk hunting, off-road vehicle use and timber management in this area.

We believe that an emphasis of timber management activities in the area is compatible with the resource output objectives for the other two major uses (ORV and elk). As a consequence we would support the implementation of a plan similar to that advanced as alternative 1. We do not believe this type management would degrade the elk situation and if the off-road vehicle trails are maintained across the logging roads, the off-road vehicle potential can still be maximized.

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We have also reviewed the two roadless areas in this planning area, Lion Rock and Naneum. We believe both these units should be returned to multiple use management. We do not believe Lion Rock should have been inventoried as roadless in the first place because of the extensive logging and old roads in the area. Its value for timber management and off-road vehicle use far exceeds its value for wilderness, in our opinion. The Naneum area is, in our viewpoint, an area that should be managed similarly to Lion Rock. Despite the fact that it has been closed to 4 wheel drive activities, we believe it ought to be reopened for that use. It definitely should not be considered for wilderness classification due to the fact that its size and configuration would make it very difficult if not impossible to manage as wilderness.

(1)

We thank you for giving us the opportunity to respond to the alternatives in this planning area. We are hopeful that the final Environmental Statement will do a more adequate job in supporting the assumptions.

Sincerely,

Stanley D. Humann
Kay A. Humann

Stanley D. and Kay A. Humann

1. These areas were included because they met the minimum criteria for inclusion in the RARE II inventory. However, both the Draft and Final Environmental Statements recommend allocations of the two areas to uses other than Wilderness. The RARE II January 4, 1979 decision allocated both areas to non-Wilderness management.

BURLINGTON NORTHERN

RESOURCES DIVISION
TIMBER AND LAND DEPARTMENT

650 Central Building
Seattle, Washington 98104
Telephone (206) 625-6503

32

September 28, 1978

Mr. John Rogers
Forest Supervisor
Wenatchee National Forest
301 Yakima Street
Wenatchee, WA 98801

Dear Mr. Rogers:

We have reviewed the Kittitas Land Management Plan DES and offer the following comments. Our comments are limited to the west sub-unit where Burlington Northern owns 51,600 of the 127,400 acres (p.14). In general the DES appears more an effort to conform to Forest Service planning policy guidelines and directives than it does an effort to responsibly and thoroughly study on-the-ground conditions, land productivity, cabability and carrying capacity for recreation and wildlife and weigh these factors against public preferences in developing a sound management plan. Emphasis should be on good management rather than on the allocation of land, and we do not see this emphasis in this DES. The Kittitas DES is an example of inadequate and undocumented data gathering; it does not provide a good range of management alternatives, and those that are provided are difficult, if not impossible, to compare.

The foundation of the study is generally weak. Some of the major points which need additional attention and/or revision include:

1. Existing uses and ground conditions cannot be changed automatically when the "goals" (p.49) for the unit developed through the public involvement process conflict with them. For example, proposing "non-road" dispersed recreation and hunting opportunities for management areas C and D in Alternatives 2, 3, 4 and 5 in areas which are heavily roaded and used extensively by ORV's (e.g., Buck Meadows) blatantly ignores existing uses. A sound management plan must consider existing conditions and adopt accordingly. In some cases, they can be altered, and in others (such as roads), they cannot.

2. The subject of land ownership adjustments by exchange is not properly addressed. The discussion of Forest Service/BN negotiations on pages 12

1. The management descriptions for Management Areas C and D have been rewritten and clarify some of these concerns. Alternative 7 in the Final Environmental Statement allocates the area around Buck Meadows to Management Area D. This allocation recognizes the heavy existing dispersed recreation use including ORV's that takes place in that area and will provide for the continuation and emphasis of such activities.

2. We have added a statement that the Forest Service-Burlington Northern, Inc. preliminary agreement areas overlap three Planning Unit boundaries. We have clarified the discussion on land adjustments in the Alternatives section.

and 13 is fairly accurate, but it should go on to state that the land exchange program concerns areas of the entire national forest and thus overlaps several planning units. Thus, the exchange program is pursued through a process separate from the land management planning. The final Environmental Statement should point this out and explain that any proposed exchange will be subject to the NEPA public involvement process. Then, explanation of the various management alternatives for the Kittitas Planning Unit should not include discussions of land adjustment; these should be omitted from the final Environmental Statement.

3. No sources or collection dates are given for data presented in the DES. It is impossible to make a valid assessment of the alternatives without knowing the age or origin of the "facts" presented. For example, through BN experience we know that the west subunit is heavily used for ORV recreation, but the statistics shown in the DES do not substantiate this; we suspect they are several years old. The short bibliography included in the DES does not alleviate this problem of documentation.

4. ORV use is not adequately considered. The west sub-unit is one of the most popular ORV areas in the state, both for recreational and hunting purposes. Yet ORV use is not addressed on pages 26 and 27 in the initial discussions of recreational activity on the unit. Accurate information on ORV activity is available and should be included in the final Environmental Statement. It seems that the Forest Service is not aware of the extent of ORV activity in the Buck Meadows area, since alternatives 2, 3, 4 and 5 propose that area for dispersed unroaded recreation and hunting. Management Area C which emphasizes "nonroad oriented big game hunting experience" has been applied to this general area under these alternatives yet seemingly ignores the fact that ORV trails bring many hunters to their favorite elk hunting campsites. The management planning should explain how the objective will be achieved. We are not sure it can be achieved.

5. The impacts on management of the existing road system are not considered. The problem with applying "nonroad" oriented management to a roaded area has been pointed out in #4 above. However, the DES "road problem" is much larger than this. First, all major roads should be shown on <u>all</u> the maps not just on the transportation system map, since they are permanent features and must be considered in the future application of any management criteria. We hope to see the major roads appear on all maps in the final Environmental Statement. Second, there was no consistency in selecting the roads which do appear on the transportation system map. For example, the Little Creek and South Fork

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3. Sources are described in the headings or footnotes.

4. Management Area C does not exclude ORV use although motorized access may be limited during the elk hunting season. The implementation of this objective is explained in the Management Strategy section for Management Area C. As explained in comment #1 to this letter, the popular Buck Meadows area is allocated to Management Area D in the proposed Alternative of the Final Statement.

5. We disagree that the existing road systems should be shown on each Alternative map. We believe that a separate road system map as included in the Draft is adequate and avoids "cluttering" of the Alternative maps.

   The transportation map in the Final Statement has been revised and updated to make it as accurate as possible. However, our intent was to display the location of roads not to detail their management status.

Taneum roads which are both cost shared roads open to public use, are not listed on page 29, nor are they shown on the map. On the other hand, some roads which are closed to public use are shown on the map. These include the Meadow Ridge Road in Section 6, Township 21 North, Range 11 East and roads in Section 28, Township 18 North, Range 15 East and Section 9, Township 19 North, Range 13 East.

6. The management areas as described in the DES are very difficult to visualize. The first description is too general (pages 53, 54). The more descriptive explanations in the appendix are not mentioned in the text and only become helpful when the reader discovers them. The two naratives should be combined in the text of the final Environmental Statement. Descriptions of the management areas are not particularly good. We find that while Management Area C, for example, is designed to emphasize "non-road hunting experiences", ORV use will be permitted there, and roads will be permitted if they do not exceed two miles per section. To further confuse the issue, Management Area C is applied in the alternatives to areas of intermingled ownership which are already fairly heavily roaded. Again, we see little relationship between the DES recommendations and on-the-ground conditions. (6)

As described in appendix A the differences between Management Areas B, C, D and E are minimal. In particular there are no signifcant differences between B and C and between D and E; an attempt to implement them on the ground (particularly in areas where Forest Service ownership is intermingled with private ownership) would show that there are not really any differences at all. We also believe the issue of big game winter range receives too great an emphasis, considering where the elk actually winter.

We question the inclusion of a research natural area around Taneum Lake in each of the alternatives. Why is this needed? At no point in the text of the DES is an explanation of the need for such an area given. The area may be justified, but an explanation should be included in the final Environmental Statement.

7. The impacts of existing landownership patterns on a proposed management plan are not adequately explained. The west subunit is intermingled private and public ownership. The DES should have explained that management objectives and techniques may be different for public and private lands. In that case the public may not see uniformity of management on the ground; an explanation of this aspect of intermingled ownership patterns should be addressed in the final Environmental Statement. (7)

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6. Management Area descriptions have been expanded and incorporated into Section IV, Alternatives, of the Final Environmental Statement. Hopefully, this will avoid the confusion caused by having such descriptions in the Appendix.

   The Proposed Research Natural Area around Taneum Lake has been dropped for further consideration by the Research Natural Area Selection Committee and does not appear on the Preferred Alternative Map, Alternative 7.

7. We agree. We have added these points in the Final Environmental Statement, page 66.

8. The combination of the various management areas into management alternatives causes further confusion. Alternative 6 (Present Management) and Alternative 1 for all practical purposes are the same. Likewise, Alternatives 2, 3, 4 and 5 are almost identical to one another. (8) It is nearly impossible to make a meaningful comparison of the alternatives because of this. An identical area is outlined in the southern portion of the west subunit in Alternatives 2, 3, 4 and 5; it is merely allocated in varying proportions to Management Areas C, D and E. One parcel of land is allocated to Management Area E in every alternative. The remaining land area will be allocated to the Taneum Lake Research Natural Area and to Management Area A in all alternatives. We have shown that, on their own, the management areas are nearly indistinguishable. Combined in "alternatives" they are hopeless. We feel the DES offers no meaningful land management choices.

9. We had hoped to see the Forest Service take this opportunity to plan for educational and interpretative aids along the Pacific Crest Trail. (9) Currently, temporary detour routes around cutting units are signed but not supplemented with information on harvesting techniques and reforestation in the area. An important opportunity for public education is foregone. The final Environmental Statement should include this objective in its land management plan.

Our objections to the preferred alternative are implicit in the general comments above. Because of these major flaws in the DES, an adequate foundation for selecting a preferred alternative was not established. The selection of Alternative 2 was not based on a sound study of characteristics and limiting factors in the west subunit of the Kittitas Planning Unit; it is impossible to see how various features of the preferred alternative could be implemented. However, there appears to be little substantive difference between current management and any of the alternatives in the DES. Therefore, Burlington Northern recommends that Alternative 6, current management, or Alternative 1 be selected as the management plan for the west subunit. Either of these offer less confusion and provide essentially the same end results as the other alternatives in the implementation phase.

Thank you for the opportunity to comment.

Sincerely,

Claudia K Craig

Claudia K. Craig
Supervisor, Land Planning

CKC/jmn

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8. Several of the Management Area descriptions have been revised to clarify the proposed management intent. The introduction to the Management Area concept has been expanded. Beyond this, we believe that the Management Areas do offer distinctive sets of management direction and that the consolidation of them into Alternatives is a logical process.

9. This is beyond the scope of this Plan. It would logically be a portion of a site specific trail improvement plan. Your suggestion is in harmony with Forest Service policy, Appendix I-19,item 5.

(33)

23 Sept. 1 978

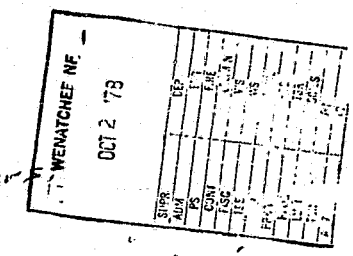
Mr John L. Rogers, Forest Supervisor
Wenatchee National Forest
P.O. Box 811
Wenatchee, Washington 98801

Dear Sir,

We want the forest kept The way it is now. No more roadless or wilderness areas. Rare ii no. 038 Lion Rock encroaches on the Swauk Mining district. No. 039 is in grazing and logging country and also mining. Such land grabs can do us no good, they are discriminatory and a burden to the tax payer. Too much money has been wasted on this foolishness.

Harry H. Hale
Harry H. Hale
Elsie H. Hale
Elsie H. Hale
Ella Rae Hale
Ella Rae Hale
Route No. 2 Box 81
Cle Elum, Wash. 98922

178



John L. Rogers

(34)

Dear sir:

I have been Riding for cattle in The Table Mountian Lion Rock area since 1931.

I can't see Turning This Area into a wilderness. There has been a Lot of area already set aside for wilderness That is better adapted for it.

I would like to see the Table Mountain area as Multiple use.

Jack White

35

September 29, 1978

John L. Rogers, Forest Superviser
Wenatchee National Forest
P.O. Box 811
Wenatchee, Washington 98801

Dear Mr. Rogers:

After a careful examination of the DES of the Kittitas Land Management Plan, I have reached the following conclusions:

(1) The DES contains an acceptable data base for a prospective land managment plan.

(2) It is reasonable and often necessary to assume that such a data base could contain at least ± 5% error, nevertheless it is sufficient to distinguish between alternatives that differ by more than ± 5% according to a particular set of evaluation criteria.

(3) No rational process was utilized in arriving to the prefered alternative (Alt. 2)

(4) No argument is provided to select alternative 2 as the prefered alternative other than a narrative, which could equally be applicable to Alternative 5.

(5) In fact, according to the DES data, Alternative 5 in many respect provides a better preferred alternative than Alternative 2, according to the DES evaluation criteria.

(6) In certain cases, such as revenues from timber production the difference between alternative 2 and 5 is less than 2.5% which is smaller than the possible error in the data base. Therefore, it is poor judgement to accept the above criteria in a decision making process and therefore one must seek additional information.

(7) Such an additional information could be provided by evaluating the actual merits of Management Area F, and therefore, the preferred Alternative must be Alternative 5.

(iii)

(8) In the attachement, (pages 1 through 6) I am enclosing a brief side by side evaluation of Alternatives 2 and 5, which substantiates the selection of Alternative 5 as the prefered alternative.

Sincerely,

Alexander L Deák

Margaret M. Deák

ALEXANDER L. DEAK
MARGARET M. DEAK
3666 WEST AMES LK. DRIVE
REDMOND, WASH. 98052

ATTACHMENT (TGS 1 - 6) (1)

I. THE PRESENTATION OF THE PREFERRED ALTERNATIVE IS MISLEADING.

The EDS on pages (iii-iv) summarizes the characteristics of the preferred alternative 2. However, the same characteristics are equally applicable to Alternative 5.

These characteristics should not be presented as items which are unique to Alternative 2. The above statements become apparent when the two alternatives are directly compared as shown below. At the same time, a rationale conclusion can be reached which will be presented following the comparison table.

ITEM	ALTERNATIVE	
	5	2
• Achieves a high production of wood fiber and forage (Management Area C)	55%	60%
• Emphasizes maintenance of big game winter range (Management Area B)	2%	2%
• Maintains nearly optimum elk cover requirements while providing timber and opportunities for unroaded big game hunting (Management Area C)	25%	17%

(2)

ITEM	ALTERNATIVE	
	5	2
• Provides opportunities for most forms of recreation with emphasis on a natural unroaded environment (Management Area D for Alt. 2 & Management Area F for Alt. 5)	15%	20%
• Maintains the natural ecosystem of the Taneum Lake Area (PRNA)	1%	1%
• Timber harvest	11.9	12.9
• Water yield (increase in acre-feet)	39500	33100
• Number of Elk	265	205
• Visitors	215335	238216

Conclusion:

(1) The characteristics of the two alternatives are approximately the same.

(2) None of the above alternatives will cause measurable overall change in social and economic characteristics at the local, regional and national levels

(3) Within the accuracy of the data base, the alternatives are too close to pretend that one is distinctly better than the other

(4) However, alternative 5 provides a chance for possible wilderness which could offer

more than Alternative 2.

(5) In fact, the statements on pages iii-iv can easily be looked upon as arguments for selecting Alternative 5 as the preferred alternative.

II. ARGUMENTS AGAINST THE RATIONALE FOR PREFERRING ALTERNATIVE 2 AND SUBSTANTIATING A SET OF RATIONALE FOR PREFERRING ALTERNATIVE 5.

- The EDS on pgs 96-98 summarizes the apparent rationale for selecting Alternative 2.
- The same rationale are equally applicable for selecting Alternative 5 as the preferred alternative.
- The rationale listed on pgs 96-98 are not sufficient to eliminate Alternative 5 as the Preferred alternative.
- Although alternates 2 and 5 are practically equivalent on the social and economic levels, Alternate 5 has the distinct advantage for providing a chance for a possible wilderness. That is, it could offer more than Alternative 2, and that possibility cannot be ignored.
- Therefore, the prefered Alternative must be Alternative 5.

The above conclusion can easily be reached by comparing the key items mentioned among the rationale on pgs 96-98 as follows:

ITEMS	ALTERNATIVES	
	5	2
•1 Increase in elk numbers	26%	19%
•2 Percent of area managed specifically to improve elk habitat and to provide unroaded hunting opportunities in Managment Area C	25%	17%
•3 Percent of area that provide approximatelly the same benefits to elk as Managmant Area C	15%	20%
•4 Total of the above two items	40%	37%
•5 Increase timber yield	-0.85%	1.48%
•6 Increase in water yield	15%	12%
•7 Increase in state revenues •7 Increase in federal revenues	-0.83	1.43
•8 Number of jobs in logging and sawmill operations	84	85
•9 General employment	253	256
•10 Percent of area where extraction of mineral resources would be encouraged (not a realized percent)	84%	99%

The assessement of the above table shows that the percent difference between the two alternatives is less than the

possible error in the data base, which could easily be 5-10%. Thus, the EDS is not sufficient to eliminate the wilderness consideration as proposed in RARE II, and therefore the prefered Alternative should be Alternative 5.

In particular, the statement that Alternative 2 'best' meets the goals that were established for the KiHitas Planning Unit is without any foundation. In fact, it totally ignores the data base of the EDS.

Alexander L Deak

Margaret M. Deak

ALEXANDER L. DEAK
MARGARET M. DEAK
3666 WEST AMES LK. DR.
REDMOND, WA. 98052

John S. Rogers. Forest Sup.
Wenatchee National Forest
PO Box 811
Wenatchee Wash 98801

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Mr. Rogers

There are those who will say "Leave them Untouched, Forever" But we can't both preserve and develop, we need certain resources, such as Timber, Water etc. Those needs may take precedence over Aesthetic Values.

But development must carry with it responsibilities and I believe balance is best arrived at thru Public discussion, such as we have on the Kittitas Land Management Plan.

I believe Alternative No 2 offers the best Plan for managing the Kittitas Planning Unit.

Yours.

John Deonge
203 West Third St.
Cle Elum, Wash. 98922

PS- Say Hi! to Dick Buscher for me -

(37)

Rte 4 Box 296
Ellensburg, Wa 98926
Sept. 28, 1978

Norm Schoonover
District Ranger, Ellensburg District
Wenatchee National Forest

Dear Norm,

I have recently reviewed the draft environmental statement for the Kittitas Land Management Plan.

Being familiar with livestock grazing in the area as a permittee for cattle grazing, I agree with the goals stated for the Kittitas Unit. I recognize the goal to intensify range management to improve forage and provide more opportunity for livestock grazing. Joint effort between the Forest Service and livestock grazers continues to improve the forage. This compliments all the goals stated in the plan.

Alternative 1 appears to be the best one in view of increased forage in the future. I prefer it's general management direction regarding the range in it's management areas.

Alternative 2 would be my second preference. It too encourages increased forage.

Regardless of any preference, joint efforts between livestock grazers and the Forest Service will continue to increase forage. That cooperation is valuable to all the resources in the unit.

with kindest regards,

Pat [illegible]

(38)

September 30, 1978

Dear Forest Supervisor:

My preference in the Kittitas Land Management Plan is #5, as it is a reduced timber production which I feel is necessary for a continued supply. The overall draft is a wonderful piece of work, and I want to thank you for the opportunity to study it. I am completely in accord with the constraints, especially as they apply to each alternative, whichever one is chosen. I am further in accord with more Wilderness areas. As our population increases, so does our need for unspoiled areas. I also maintain that we should cut down on the amount of horse travel on some of our trails.

Sincerely,
Walter D. Bailey

Walter D. Bailey
8413-83rd Ave. NE
Everett, WA 98205

C.3

BOISE CASCADE CORPORATION
P. O. Box 8
ELLENSBURG, WASHINGTON 98926
(509) 925-5341

39

October 2, 1978

John L. Rogers, Forest Supervisor
Wenatchee National Forest
P.O. Box 811
Wenatchee, Washington 98801

Ref: Environmental Statement

Dear Mr. Rogers:

After reviewing the Draft Environmental Statement for the Kittitas Planning Unit on the Wenatchee Nation Forest, Boise Cascade Corporation supports alternative number one. This alternative provides maximum benefits in all output categories except elk numbers and projected road miles (summary table page 104). The economic return to both the counties and to the National Treasury is for greater with alternative number one.

In considering alternative one under the planning goals constraint, it meets or exceeds all goals except diversifying wildlife habitat and providing more opportunities for unroaded hunting. Proper management and administration within the framework of Management Area A strategies could overcome these possible shortcomings. Logging practices could be specified to maintain or improve wildlife habitat and minimize damage, i.e. leaving snags, controlled brush disposal, minimizing operations along stream edges and meadow lands and construction of fewer miles of specified roads in lieu of temporary systems.

Management Area A could be managed to provide for specific sites within the area to provide for elk habitat requirements during critical periods, such as calving time and hunting season. For example, timber harvest units could be designed to consider hiding and escape cover requirements throughout the entire area. Seasonal or permanent road closures could be used to achieve cover requirements and also enhance unroaded hunting experience. The concern (p. 99) that alternative one will increase the chance for disturbance to rare and endangered species is unfounded since there are none (p. 26).

As alternative number one provides maximum benefits and can satisfy all planning goals, it should be implemented in the Kittitas Planning Unit.

The following are some additional comments we have:

(1) Page 20,101 Comments: If the potential yield for commercial forest land is 161 board feet per acre a year under current management, then this yield should increase under intensive timber management (Management Area A), not decrease to the estimated 140 board fee per acre per year.

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Page 40 Comment: Hunting - A majority of the elk hunters seem to prefer roaded hunting areas, which may be in conflict with the stated goal of emphasizing unroaded hunting experiences. However, if this goal is desireable, the objective could be attained with a combination of temporary and permanent road closures.

(2) Timber - We prefer that the timber goal read: Maximize timber production based on site potential, recognizing reasonable restraints to accomodate other resource values.

(3) Recreation - Options for developed recreation in the future should not be overlooked - even though present emphasis is on dispersed recreation. Potential developable sites should be kept on inventory and reserved for that use. Existing developed campgrounds are filled to over capacity during peak periods such as hunting season.

(4) The Washington State Department of Game is concerned that the harvest must be maintained at a high level. The amount of winter habitat and budget levels for winter feeding restrict the herd population. The number of elk that management units can sustain is controlled by the winter range available to the animals and to the attainable harvest. The amount of summer forage is not a limiting factor nor is summer hiding cover. In other words, there is no real opportunity to dramatically increase numbers. Fewer roads will possibly mean fewer hunters who are willing to expend the time and effort to pack in and therefore lessen elk harvest. This will increase the quality of the elk hunting but will possible result in over population if carried to any great degree.

In general, we believe the planning team did an excellent job in analyzing and presenting resource data and output. The Draft Environmental Statement is the best we have seen. Thank you for giving us the opportunity to respond.

Sincerely,

David J. Browitt

David J. Browitt
Area Timberlands Manager
BOISE CASCADE CORPORATION

DB/naj

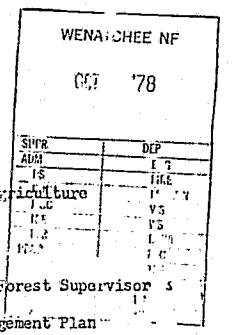
1. The 161 board feet per acre per year is the average potential yield for commercial forest land on all of the Wenatchee National Forest based on the 1963 Wenatchee National Forest Timber Management Plan. When present day visual, streamside management, etc. considerations are applied, the average yield calculated for the Kittitas Planning Unit is 126 board feet per acre per year (page 101, Alternative 6, Draft Statement).

2. The word "optimize" better described the intent of the goal.

3. A statement to this effect is included in the Final Environmental Statement, under Recreation page 29.

4. The Final Environmental Statement stresses the point that State Game policies and winter range conditions determine elk populations. The elk number statistics shown in this Statement show estimated potentials only.

(40)



611 North Pacific Street
Ellensburg, Wash. 98926

September 29, 1978

United States Department of Agriculture
Wenatchee National Forest
P. O. Box 811
Wenatchee, Washington 98801

Attention: John L. Rogers, Forest Supervisor

Subject: Kittitas Land Management Plan

Dear Sir:

In reply to your request for comments with regard to the subject Plan, I wish to be placed on record as being in favor of your proposed Alternative 2. To be used in conjunction with you ideas expressed in Management Area D.

I was able to attend only one of your public hearings, and there were only six persons in attendance plus the representatives presenting the program. I truly felt that it had not be brought to the public's attention, or else a much larger turn out might have been enjoyed.

Speaking on behalf of the Kittitas County Snowmobiler's, Inc. (SNOBS), of which I am currently an officer, we feel that more and more land is being placed in the WILDERNESS category, and with such a limited number of people can enjoy it, that we feel your Management Area D is much more fair to a great many of varied interests to include many types of recreation. With your expert management of the Kittitas County area, we feel that everyone in this valley would be able to enjoy the land to its fullest, and still be able to not endanger the foliage, trees, trail system or the wildlife in anyway. To continually close areas to public use, may in your view point, be protecting it. But from what? Devastation by fire which cannot be controlled due to no roads into this area to bring the fire under control. How about pests, desease and insects which infest the forests and plant life, when in a WILDERNESS area no one is allowed to control this and consequently this desease spreads and ruins many thousands of acres of forest. This Forest WILDERNESS areas are also being contaminated due to so many backpackers. There are no sanitation facilities up there and so waste is left and breeds flies and desease carriers.

Please give careful thought to ALL persons who wish to enjoy the outdoors, not just the few who want it all to themselves.

Select Alternative 2 and make many people in this valley happy.

Sincerely yours,

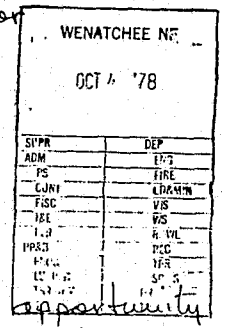
Mrs. Dottie A. Simonis

(Mrs.) Dottie A. Simonis
Kittitas County Snowmobilers, Inc.
Treasurer

702 Roslyn Place
Cle Elum WA 98922
Sept 29 1978

(41)

John L. Rogers, Forest Supervisor
Wenatchee Nat'l Forest
PO Box 811
Wenatchee WA 98801



Mr. Rogers,

Firstly thank you for the opportunity to review the draft enviormental statement for the Kittitas Land Management Plan.

My views come from being raised in the area. I was introduced to most of the country by my Dad. Later I camped, fished hunted, flew, logged, motorcycled and skiied here. Ive experienced exposure to my parents, grandparents and "old timers" whom have spent their whole lives in and around the discussion area.

Reviewing the draft I found the "Preferred Alternative 2" unacceptable. The area cannot withstand, "optimum management of wood fibers," the term synonymous with clear cutting.

Management Area "F" under Alternative 6 is the only acceptable compromise plan with any merit. That compromise plan would only be so with the inclusion of RARE II Undeveloped Area and the Proposed Research Natural Area.

I hope my recommendations are not viewed as excessively enviormentally protective. I am aware of the area and I know of what I speak.

The Cabin Creek area which you will note is a large block of private land is an example. This block of 49 square miles is predominately a disaster area. Every tree has been stripped from the valley sides. The remaining adolescent trees smashed down or uprooted. Slash chokes the smaller streams and Cabin Creek, a once magnificently beautiful stream is a gravel wash 50 to 100

feet wide where unchecked runoff roars down the canyons. The ground cover vegetations are destroyed. There is no reason for this type of forest management except greed and quick profit.

Kittitas County will be paying the costs for this mismanagement. These costs will be in the form of yearly flood damage, uncontrolled runoff quickly filling reservoirs in Spring with no water in the Fall. Forest fires further result from this moisture deficit. There will be costs for the silted streams and resultant fish spawn and fry kill. Besides it looks terrible and will never recover.

This policy of cutting all timber in an area and then re-seeding does not work. Trees cannot be treated like a garden plot. A forest clear cut never recovers. The natural balance cannot recover from the disruption.

These areas, Cabin Creek included could be logged every 20 years if the adolescent trees were left and truly sustained yield management were practiced. Every generation would and could selectively log and the result would be better in every aspect — lumber, watershed, visual impact and economy.

One of the most significant features of the area is the annual 20-35 inches of moisture. Unique moisture in the form of summer thunderstorms and winter snow. Unique management must be implemented. The ground cover or forest must be retained to protect the forest floor from this moisture. Unprotected by forest cover the soil is loosened by summer storms and Spring runoff becomes unchecked and uncontrolled. I only invite you to stand in the rain of a thunderstorm in a clear cut and then in a stand of trees. The soils of

these areas cannot withstand raindrops hitting unchecked by tree cover.

In closing I hope the plans for these areas are formulated with the thought we are only caretakers of this land. Anything we do should only reflect care when we pass it on.

Sincerely,

Stanley W. Murphy

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Mr. John L. Rodgers
Forest Supervisor
Wenatchee National Forest
P.O. Box 811
Wenatchee, WA 98801

42

Dear Mr. Rodgers:

Thank you for providing us an opportunity to review the Kittitas Land Management Plan. Region 1 of the Pacific N.W. 4-Wheel Drive Association includes 63 clubs located between Tacoma and the Canadian border on the west side of the Cascade Mtns. Despite the fact that all of us are located in this geographic area, of us spend a good percentage of our time enjoying the 4 Wheel Drive opportunities in the Kittitas land management plan area. We especially appreciate the courtesies extended to our organization by your planning team when it came to our regional meeting in May to explain the basic plan concepts.

We are concerned with the makeup of this land planning document in many respects. It contains many assumptions that are unexplained or unjustified in the text. It also does a completely inadequate job in our opinion of addressing the off road vehicle use in this area. It is inconceivable to us that off road vehicle use would be labeled "moderate" when this area represents one of the best known and most heavily used 4 wheel drive and possibly even motorbiking area in the entire state. The fact that the intensity of this use is not devoted some more specific discussion destroys much of the credibility of the land use plan process. We also believe the statement does an inadequate job of portraying how the particular land management alternatives can be effectively applied with so much non-federal land. In fact, it is questionabl in our viewpoint whether or not many of the prescriptions discussed in the various alternatives can be accomplished. From this viewpoint we believe the entire statement needs to be **completely re-vamped**.

Following are some of our specific observations on the statement itself:

(1) Page 26: Recreation: We fail to understand why off road vehicle use was not addressed in this discussion.

Page 27 - Off road vehicle use is not set out in the tabulation. The fact that this (2) state has an agency dealing with off road vehicle use (IAC) and that Kittitas County has a fairly active off road vehicle committee and program makes our concern even more valid.

Page 28 - The table on this page does list 4-wheel drive use. We fail to understand why the Manastash and Taneum were left out of this display, however. Further, it is (3) not clear from the display whether some of the general categories might include some of the dispersed recreation uses. For example, driving for pleasure could include 4 wheel drive activities. The derivation of these visitor day figures should be explained.

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Page 42 - Lion Rock RARE II #058: We do not agree with the statement in paragraph 4 (4) that "A moderate amount of dispersed use occurs in the area including rock hounding, off road vehicle use ...." There is extensive off road vehicle use in this area and we would consider the level of use to be high.

Page 43 -Naneum RARE II #059: We agree with the volume estimates of dispersed recreational use in this area although as pointed out above we believe the use is heavier in the Lion Rock area. This is principally because much of the off road vehicle use in the Naneum has been restricted in recent years. We believe the FS should take another look at whether or not 4 wheel drive use in the Naneum would be acceptable. We recommend that the area be re-opened to four wheel drive use as many of the off road vehicle trails are very good 4 wheel drive routes.

1. The source publication did not provide such data. However, this information is shown on page 28 of the Draft which was developed from Forest Service records.

2. This table refers to Kittitas County. The table breakdown was taken directly from the publication "Regional Recreation Data Program for the Northwest, June 1975". We agree that it would be beneficial if there was a separate category for off-road vehicles. Unfortunately, there was not.

3. We have included Taneum-Manastash and added a source footnote. The "general" categories may include some ORV use. However, the general category listed is the primary purpose for the visit.

4. We changed this to high.

The following paragraphs will indicate our feeling on the management assumptions for the management areas displayed among the alternatives. We believe your team has done a good job in explaining the basic character of these management strategies. We do suggest a restructuring of the descriptions, however. Having them described first in the principle part of the DEIS and then re-described with greater precision in the appendix makes the DEIS difficult to use.

Management Area A. In general we would favor having this management area applied to most of the unit, principally because it is a management strategy that we understand. Experience has already shown that the principle commitment of land area to resources other than timber usually results in a diminution of 4 wheel drive opportunities. We would recommend, however, that the use of off road vehicles be better explained. We suggest that with proper planning and maintenance that is available under agreements with the 4 wheel drive clubs that a major expansion of 4 wheel drive use could occur in practically all of this land planning area. The popularity of the region for this type use should be as prominent in your planning effort as elk management for example.

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Management Area B: We do not completely understand the reason for this management area. The confusion becomes especially acute when reading the introductory paragraph of this management area on page 60. Seemingly the Forest Service is saying that it must provide winter range because of scarcity of winter range on private and game department lands. This seems to be more of a self serving assumption than a statement of fact, especially when you consider the makeup of the lands in the winter range areas immediately adjacent to these two unit plans. The L.T. Murray Game Range and Oak Creek Game Range provide winter range for the west unit and it is difficult to perceive how any of the Federal lands in the west unit could contribute any measurable improvement. So far as the east unit is concerned, there are so few opportunities for federal lands it would seem that winter range considerations are given a disporportionate amount of consideration.

5

5. Management of winter range is a key factor in the maintenance of elk herds at current levels. Existing winter feed programs on State Game lands dramatize this point. Winter range opportunities on the Planning Unit are minor when compared to the total acreage of the Planning Unit and winter range on adjacent State and private land. Still, where such opportunities do exist on the Planning Unit, we believe it is prudent to manage for them.

Management Area C: This is the management strategy that we have the most concern with. We do not believe the DEIS adequately describes this strategy and how it will be implemented and controlled. The arbitrary limitation to road access to no more than two miles of road per section during the hunting season may be appropriate but we believe the planning team should specifically address how the controlls would be applied. Our basic concern with this management area would be that ultimately a decision could be made that the game management objectives cannot be achieved and that as a consequence all of the roads and 4 wheel drive trails in the area encompassed by this management area would be closed. If our assumptions are correct and if the solution were a closure we believe the FS should so state in specific terms. If that is the outcome we strongly object to the use of this management strategy in any form.

(6)

Management Area D: In general we have little difficulty with this management area. However, in a practical sense we wonder whether or not it is the appropriate strategy to apply to much of this area. We do appreciate the emphasis the FS has placed on dispersed recreation under this management strategy and would generally conclude that this looks like a pretty good thing for 4 wheel drive use. However, in a practical sense many of the areas that would be committed to natural cover retention probably could be improved in terms of total resource output with a little less restriction on the manipulation of cover. In other words, we recommend a more practical outlook.

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Management Areas E and F: In general we see little reason for the application of these management areas. The DEIS does not adequately describe a need for this type management; and without a description of need we recommend the two management areas be dropped from further consideration.

6. Management Area C includes guidelines for "limited road access" during the hunting season. Two miles of road or trail per section open to public motorized use is a broad objective only. The actual limitations would be determined through coordination and close public involvement. Consideration of traditional uses such as campsites and access to water sources would certainly be included. There is no intent to close all of the roads or 4-wheel drive trails to motorized use.

Proposed Research Natural Area: This is one area of real concern for it seems the planning team simply assumed that a research natural area was needed. Nowhere does the DEIS explain why this research natural area is needed. Unless a definitive reason for including this type area can be supplied and that reason should include a statement of why this research need is not being fulfilled in other areas of the Northwest we recommend that any further consideration of a reserach natural area be dropped. (7)

In summary we conclude that the FS has not really done a very good job in displaying alternatives and the need for various management strategies in this area. The statement is founded upon a number of unexplained assumptions many of which, as we have pointed out above, contain no foundation. We believe the planning team has almost arbitrarily discounted the use of this area for 4 wheel drive vehciles. The discussions for roads and trails on pages 28 and 29 do not do justice to the use of 4 wheel drive vehicles in this area. Considering the fact that one page is devoted to a description of all ORV use and almost 4 pages is devoted to the Pacific Crest National Scenic Trail and visual resource concerns which are more or less tied together over much of the area does not seem to be appropriate. 194

Region 1 of the Pacific NW 4 Wheel Drive Association, therefore, recommends that Alternative 1 become the management plan for this area. Our basic concern with the preferred alternative is that we do not completely trust the process and the ultimate controls that could be applied. We believe that the management areas applied to Alternative 2 might in fact become areas in which four wheeling becomes more and more limited. We similarly do not support the other alternatives because they all would create more and more restrictions on our types of use.

Thank you for considering our remarks. We sincerely expect the FS to give much greater consideration to many of the points that we have made in the period of time between now and the formulation of the final EIS.

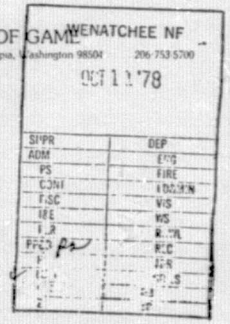
Jim Loe
Region 1 Vice President
Pacific N.W. 4 Wheel Drive Association

7. Please refer to comment # 6 in response to input #32.

STATE OF WASHINGTON

Dixy Lee Ray
Governor

DEPARTMENT OF GAME
600 North Capitol Way, Olympia, Washington 98504 206-753-5700



October 9, 1978

Mr. John Rogers, Forest Supervisor
Wenatchee National Forest
PO Box 811
Wenatchee, Washington 98801

RE: Draft Environmental Statement
Kittitas Land Management Plan

(43)

Dear Mr. Rogers,

Your document has been reviewed by our staff as requested. Comments follow.

(1) 195

1. Although Chapter 5, Effects of Implementation, discussed briefly the relative impacts of each Alternative and Management Area (strategy) on wildlife, it largely ignored the fishery resources of the Kittitas Unit. Since the alternatives and strategies which most favor elk habitat also result in the most runoff and stream sedimentation, we feel that this is a significant omission.

2. Of the alternatives presented in the draft environmental statement, we prefer Alternative 4 as it appears to present a balanced and reasonable approach to the conservation and management of both game and non-game fish and wildlife in the Kittitas Unit.

Sincerely yours,

THE DEPARTMENT OF GAME

Joseph E. La Tourrette, Applied Ecologist
Environmental Management Division

JEL:bj

cc: Agencies
Regional Manager - Region Three

1. We have included the fisheries resource in Section V. Appendix F explains the Forest Service Region Six Fish Habitat Management Policy while Appendix E describes Streamside Management Units These policies and other State and Federal laws are considered prior to implementing any management activity or project on Planning Unit.

The solid gold portrait mask, encrusted with semi precious stones, found in the tomb of the 14th century B.C. Egyptian Pharaoh, Tutankhamun, is one of fifty five spectacular objects on display in the international loan exhibition, "TREASURES OF TUTANKHAMUN." The mask, inlaid with carnelian, lapis lazuli, quartz, feldspar, obsidian and gold, is over 20 pounds and covered the head and shoulders of the dead king. The exhibition of treasures, an unprecedented loan from the Egyptian government, has been made possible by grants from the National Endowment for the Humanities and EXXON.

SEATTLE, WA
WENATCHEE NF
15¢ OTHER WORTHY HOMES

Dear Mr Rogers,

I have just become aware that the Forest Service will be making their final recommendations on the Kittitas Planning Unit. I believe that the Table Rock and Nareum Ridge areas should not have roads because of the thin layer of top soil which can easily silt the streams. In order to maintain high water quality for fish and wildlife these areas should remain roadless.

Sincerely,
Marilyn Fete
5010-92nd S.E.
Mercer Island
98040

(44)

Supervisor, Wenatchee
National Forest
John L Rogers
P.O. 811
Wenatchee, Wash
98801

* National Gallery of Art, Washington November 17 1976-March 13 1977
* Field Museum, Chicago April 29, 1977-August 14, 1977
* New Orleans Museum of Art September 16 1977-January 15 1978
* Los Angeles County Museum of Art February 14 1978-June 15 1978
* Seattle Art Museum June 17 1978-November 11 1978
* Metropolitan Museum of Art, New York December 15 1978-April 11 1979

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STATE OF WASHINGTON
Dixy Lee Ray
Governor

WASHINGTON STATE PARKS AND RECREATION COMMISSION
7150 Cleanwater Lane, Olympia, Washington 98504 PJ
206/753-5755

October 13, 1978

(45)

35-2650-1820
Draft EIS -
Kittitas Land Management
Plan
(E-1336)

Mr. John L. Rogers, Forest Supervisor
Wenatchee National Forest
P.O. Box 811
Wenatchee, WA 98801

Dear Mr. Rogers:

Draft EIS - Kittitas Land Management Plan

The Washington State Parks and Recreation Commission has reviewed the above-noted document and does not wish to make any comment.

Thank you for the opportunity to review and comment.

Sincerely,

David W. Heiser, E.P., Chief
Environmental Coordination

sg

WENATCHEE NF
OCT 15 '78

International Snowmobile Industry Association

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Washington, D.C. 20036
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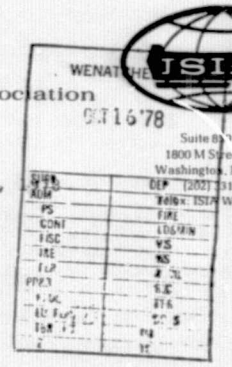
Telex: ISIA WSH 89-534



October 2, 1978

Mr. John L. Rogers
Forest Supervisor
Wenatchee National Forest
P. O. Box 811
Wenatchee, WA 98801

46

Dear Mr. Rogers:

The International Snowmobile Industry Association has carefully reviewed the draft environmental statement for the Kittitas Land Management Plan and wishes to submit its comments and suggestions in the hopes of stimulating rational, equitable public policy. We appreciate this opportunity and are hopeful that our views will be reflected in the final plan.

In general, we support the preferred alternative of the draft plan. Winter conditions in the planning unit are such that snowmobiling has become a popular form of winter recreation and we believe the preferred alternative is the most responsive to the needs of area snowmobilers.

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General Comment and Statement of Need

Commercial production of the modern, lightweight snowmobile has a short history, extending back slightly more than one decade. Within this period, the sport of snowmobiling has grown to its current stature involving millions of individuals of all ages as active participants in this healthful, family-oriented activity.

Recreational snowmobiling continues to grow and attract new adherents at a rapid rate. According to a survey by the A. C. Nielsen Company, snowmobiling is the third fastest growing sport in America - ranking only behind tennis and snow skiing. The survey further showed that participation in the sport grew by 19% between 1973 and 1976.

An extensive nationwide telephone survey conducted in 1977 by Opinion Research Corporation of Princeton, New Jersey for the U.S. Department of the Interior's Heritage Conservation and Recreation Service (formerly Bureau of Outdoor Recreation) showed that in the previous year, 8.9 million people in the United States had snowmobiled more than four times, plus another 5.3 million had snowmobiled up to four times.

The survey also explored interest in trying new types of outdoor recreation. Out of 38 recreational activities listed, there were only five in which there was higher latent interest shown than in snowmobiling. More than 5.3 million persons who had never before snowmobiled indicated a strong interest in doing so.

Such growth and acceptance is indicative of the previously unsatiated need for outdoor recreational activities during the winter period. Despite the grandeur and uniqueness of this season, the winter environment has historically been characterized by lessened human mobility, limited social interaction, and a marked decrease in out-of-doors activities.

To fully comprehend the significance of the new vitality snowmobiling brings to wintertime, we must consider the role of recreation in our lives. An accompanying document explores this area in greater detail; however, it is no exaggeration to say that our mental and physical well-being rests on our ability to ease the pressures accumulated during our normal routines. As the trend continues toward highly urbanized and faster paced lifestyles, more traditional forms of release are inhibited.

Sociologists, physicians, and philosophers alike have suggested linkages between lifestyles lacking in healthful recreational activities and such manifestations as greater risk of heart attack, lessened self-confidence, and lowered productivity on the job. Recreational undertakings are highly personal, subjective experiences, thereby further compounding the difficulties faced by public officials in planning and/or providing for such opportunities; thus, no ideal and universal recreational mode can be developed to fulfill the genuine needs of each individual. Finally, climatic conditions which restrict recreational options pose serious societal problems.

Over the past decade, the sport of snowmobiling has acted to revolutionize the once sedentary nature of winter activities. Indeed, outdoor wintertime activities have been removed from the province of the few to the realm of many, an important development in maximizing the benefits derived from recreation.

Policies governing the use of snowmobiles should reflect a clear perception by officials of the multitude of beneficial attributes, both personal and societal, associated with snowmobiling which is, according to Heritage Conservation and Recreation Service figures, one of, if not the, leading American winter outdoor recreation forms.

ORV Categorization

We strongly oppose any collective assessment of the environmental, social, aesthetic and personal impacts of such diverse activities as snowmobiling, motorcycling, 4-wheel drive vehicle use and ATV

operation. The "Detailed Fact-Sheet" prepared by the U.S. Council on Environmental Quality to accompany Executive Order 11989 issued on May 24, 1977 states:

> "This amendment [to Executive Order 11644] will not result in an arbitrary or blanket closure of the public lands. Moreover, it will only affect those off-road vehicles actually responsible for environmental damage. Thus, where snowmobiles, for example, cause no harm during the winter, they will not be restricted simply because motorcycles are causing damage during the summer."

The intent of Executive Order 11989 is clear and we urge the Forest Service to continue and expand efforts to evaluate each type of off-road vehicle individually. While the proposed plan does distinguish between snowmobiles and other off-road vehicles, we believe the narrative of the plan could better assess the specific environmental impacts of each activity.

(1)

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Environmental Impact

Perhaps the most important weakness of any collective assessment of "ORV impact" is seen in the area of environmental impacts, a fundamental consideration in public policy and public land planning.

An examination of the environmental effect of snowmobiling is provided in an enclosed document. As a general comment, though, it is useful to note that virtually all of man's recreational activities, from hiking to pleasure driving, have some measure of environmental impact. A more sophisticated concept reflecting the magnitude and significance of such impacts would be more meaningful than simply noting the existence of some unmeasured effect. Here snowmobiles, perhaps unlike other ORV's, may be justifiably considered to have minor consequences except in those areas of an especially critical environmental nature, where man's very presence can prove disruptive.

A snowmobile is operated in a manner different from any other ORV. Its sole season of use is winter; its medium is a layer of snow, blanketing and protecting the land's surface. Despite early accusations that the snowmobile was a prolific despoiler of vegetation and wildlife, scientific studies have largely eradicated such fears.

We feel there has been significant research to support this thesis. Mr. Richard L. Bury, of the Department of Recreation and Parks, Texas A & M University, in a paper written for the Wildlife Management Institute in 1978, entitled "Impacts of Snowmobiles on Wildlife," summarized the environmental impact of snowmobiling this way:

1. This was done in the Wenatchee National Forest ORV Plan. We agree that the impact of snowmobiles on the physical environment is very small.

> "The snowmobile industry early recognized the need for research into the environmental effects of its machine and actively supported independent research studies at universities; the result was that by 1973 it could be stated that 'in-depth research conclusively points out the minimal impact the snowmobile has on its environment' (P. Doyle 1973). This statement is unquestionably true when placed in the context of all off-road vehicles; the snowmobile truly produces less impact on environments than do motorcycles or four-wheel drive vehicles."

The U. S. Department of the Interior issued an environmental statement covering the implementation of Executive Order 11644, as amended by Executive Order 11989, in the spring of 1978. It contained the following conclusion:

> "A major distinction is warranted between snowmobiles and other types of off-road vehicles. Snowmobiles operated on an adequate snow cover have little effect on soils--and hence cause less severe indirect impacts on air and water quality, and on soil-dependent biotic communities, than other ORV's do."

Evidence is thus clear that treatment of motorcycles, snowmobiles and four-wheel drive vehicles as a single entity under the term "off-road vehicle" is a counter-productive exercise.

Wildlife and Vegetative Impact

Special concerns exist among snowmobilers and management officials alike regarding the relationship between snowmobiling and wildlife. Recent research in these areas serves to dispel many of these concerns.

The results of a comprehensive three-year study conducted by the University of Wisconsin were published in 1976 in a report by Dr. Andres Soom. This report, entitled "Emission, Propagation and Environmental Impact of Noise from Snowmobile Operations" concluded:

> "The results of extensive experiments on the effects of snowmobile noise and operation on the behavior of deer and rabbits are presented, and it is concluded that the noise from snowmobiling operations, does not, by itself appear to be a significant factor in determining animal behavior."

Addressing the subject of snowmobile operations in Yellowstone National Park, Jack Anderson, former Superintendent of Yellowstone, commented:

> "We found that elk, bison, moose and even the fawns wouldn't move away unless a machine was stopped and a person started walking. As long as you stayed on the machine and the machine was running, they never paid any attention. If you stopped the machine, got off and started moving, that was a different story. The thing that seemed to be disturbing to them was a man walking on foot.
>
> "Now in reference to snowmobile operation in the Park infringing upon the intrinsic majesty of the area or threatening the wildlife characteristics of the Park, I'd have to say this simply is not the case. I think one of the things the snowmobile did was to finally let people see what a great experience it is to get out in the wintertime and really see the Park."

Furthermore, concerns about wintering deer and the effects of snowmobile operation in the White Mountain National Forest led to a study by the Forest Wildlife Biologist. Forest Service staff and student volunteers monitored snowmobile operation in the forest. A summary of the study entitled, Snow Machine Use and Deer in Rob Brook, indicated that deer travel patterns were not affected by periodically heavy snowmobile use. In addition, "no evidence of winter (animal) mortality" was found, and continued use of established snowmobile trails was recommended.

Unfortunately, some isolated instances of wildlife harassment occur. Harassment--whether by means of horse, truck, four-wheel drive vehicle, trail bike, skis or one's own feet--cannot be condoned or rationalized. Such actions constitute deviant and, in most cases, criminal behavior, and should not be confused with the sports of horseback riding, hiking, skiing, trail biking and snowmobiling.

Where snowmobiling is concerned, prevention of unintentional wildlife disturbance is usually quite readily accomplished because the mobility of animals, like that of man, is typically greatly reduced in winter. Old studies involving noisy snowmobiles indicate a half-mile buffer zone avoided disruption of wintering elk, while smaller buffers seemed sufficient for other large wintering animals like deer. Because ungulates gather into identifiably confined yards in most instances during winter, snowmobile traffic can be controlled to establish an appropriate buffer which, because of the radical quieting which has occurred in new snowmobiles, now can be safely far less than one-half mile.

The overwhelming majority of those people who enjoy snowmobiling are responsible and concerned citizens who support existing laws designed to deter this problem. In a letter to ISIA, dated April 6, 1978, the Honorable James C. Cleveland, U. S. House of Representatives, addressed this very point:

> "Certainly in the state of New Hampshire, snowmobilers have taken their place among legitimate users of our outdoors, and have done a rather good job of policing their own ranks to prevent the activities of a few from seriously harming the sport."

Those familiar with the sport of snowmobiling and the manner in which it is conducted would agree with Dr. Richard Stace-Smith, a research scientist with Agriculture Canada. In an article written for the October-December 1975 issue of Nature Canada, entitled "The Misuse of Snowmobiles Against Wildlife in Canada," he stated:

> "Most snowmobiling...scarcely impinges on wildlife. The machines are used legitimately for family recreation, farm work, and to an increasing extent, they are used on trails constructed especially for snowmobiling."

Even the concerns voiced relative to alteration of the subniveal microclimate must be more broadly understood. Snow compaction by snowmobiles is a minor cause of such temperature drops, because snowmobile operation compacts a very small portion of the total surface area of any land resource. Far more significant microclimate impacts result from fluctuations in snowfall and snowcover, and from ambient temperature variances from winter to winter. This was documented in a study by Dr. Wallace J. Wanek, at Bemidji State College in Minnesota.

Unsubstantiated charges are also often made regarding vegetative impact, covering both mechanical and environmental effects. Again, research provides a perspective to judge the consequences of snowmobiling in this area.

Those not familiar with snowmobiling are inevitably surprised to learn that a snowmobile, which is designed to float on the surface of the snow, exerts dramatically less surface pressure than other types of recreational activity. Specifically, a snowmobile and rider produce no more than one-half pound per square inch in downward pressure. An all-terrain vehicle and rider exert three times as much pressure (1.5 psi), a hiker ten times as much (5 psi), a horse and rider sixteen times as much (8 psi) and a 4-wheel drive vehicle and rider sixty times as much (30 psi). (See Table I). With the exception of snowmobiling, all of the other cited recreational activities generally take place under nonsnow conditions, thus exerting pressure directly against the ground surface. But the snowmobile's one-half pound of pressure is further attenuated by an intervening blanket of snow.

TABLE I

Average pounds of pressure per square inch exerted on earth's surface:

Object	Lbs. of Pressure
Four-Wheel Drive Vehicle.	30
Horse	8
Man	5
All-Terrain Vehicle	1.5
Snow Machine.	.5

(All vehicle weights considered include 210 lbs. estimated weight of one person and gear.)

In 1973, the University of Wisconsin completed a study on the effects of snowmobile use on agricultural fields. Utilizing study plots in five test areas, the findings of the research team indicated that snowmobile traffic did not affect the fields of winter wheat, alfalfa, red clover and grass legume stands.

The team, headed by J. W. Pendleton, validated the observations of thousands of snowmobiling farmers. The team harvested, weighed and examined alfalfa, Kentucky bluegrass, turfgrass, winter wheat, red clover and birdsfoot trefoil-orchardgrass from both test and control plots. Their comments:

- "Snowmobile traffic on winter wheat showed no effect on grain yield."
- "No differences were found between alfalfa yields from snowmobile traffic and non-traffic areas."
- "Turfgrass species subjected to snowmobile traffic were Pennlawn red fescue, Illahee creeping red fescue, and Merion and Park Kentucky bluegrass. Snowmobile traffic generally reduced yields at the first harvest date in late April but did not adversely affect later harvest yields."
- "Yields from red clover plots showed no differences due to snowmobile traffic."
- "Snowmobiling caused no differences in total yield or variation in percent grass and legume stands."

In summarizing, the researchers stated:

> "Our treatments may not be exactly similar to what happens on an individual field. In one sense, these trails had traffic far in excess of random snowmobiling on open fields, but perhaps not as high as the traffic on established official trails maintained for public use of snowmobile clubs. We have assumed that vegetation vigor and yield is of less concern on permanent trails than on agricultural lands. However, some of our track areas at Ashland have now received over 350 passes each of the past two winters without decreasing the stand or yield of alfalfa."

The snow depths during the snowmobile runs in the test plots ranged from less than two inches to more than 16 inches, and temperature on testing days ranged from a high of 50 degrees F to a low of -10 degrees F.

Similar research undertaken by Dr. James C. Whittaker and Dennis S. Wentworth, of the School of Forest Resources at the University of Maine, reached the conclusion that "compaction by snowmobiling does not alter the green weight yields of alfalfa in Maine."

In Utah, a study conducted by Professor Joel E. Fletcher, a hydrologist at the Utah Water Resource Laboratory, indicates that snowmobile-induced compaction does not even damage wheat crops:

> "Contrary to popular thinking, instead of damaging the wheat crop, the snow compaction caused by the snowmobile treads and by the roller actually increased the yield of wheat. Looking closely at the process, Professor Fletcher found that as a result of compaction, snow mold was eliminated, the ground surface was not frozen hard, and the snow melted and entered the soil at a slow rate so that erosion was reduced..."

In its 1978 final environmental statement regarding off-road vehicle use of public lands, the U. S. Department of the Interior stated:

> "Where snowmobiles are used exclusively over snow on roads and trails, the impact on vegetation is indeed virtually nil."

Recreational Opportunity

We believe that recognition should be given to the fact that without a snowmobile, many of nature's premier aesthetic winter sights would be unavailable. Before the advent of snowmobiles, only those few of extremely strong constitution could enjoy the beauty of winter recreation. Limited numbers of people had the needed stamina and vigor to ski and snowshoe extended distances in hostile environments. This meant the young, the old, the frail, the handicapped, and in fact, most Americans had scant opportunities for outdoor winter activities.

Snowmobiling has changed this. The demands of this sport are such that virtually none need be excluded. It is the feeling of equality among all who participate in the sport that makes snowmobiling so appealing. This quality is emphasized in the article Recreation for Special People, printed in the Fall of 1977 "Outdoor Recreation Action," a U. S. Department of the Interior publication:

> "Raymond Conley, who is a member of both the New Hampshire House of Representatives and the Governor's Commission on the Handicapped, attempted to conduct a survey to determine the total number of disabled snowmobilers in his state. He found that it was impossible to do so because disabled citizens are so well integrated in the sport and into local snowmobile clubs that there simply has been no reason to highlight their disabilities. Once on the machine, it all comes down to skill, physical conditioning, and a love of the winter outdoors. States Conley: 'This is mainstreaming just as we would like to have it.'"

This great variety of people, of all ages and physical abilities, who quest for healthy outdoor activity during all seasons of the year offers a real challenge to a system that historically has catered to the warm weather user. Innovative land managers like Park Ranger Bob Enns of Manitoba's Spruce Woods Provincial Park and Yellowstone National Park Superintendent John Townsley have accepted the challenge of winter recreation by offering new vistas for snowmobiling. Mr. Enns inaugurated Interpretive Trail Rides which are guided nature tours by snowmobile to learn about the geology of the area and the plants and wildlife of the winter ecology. In Yellowstone, guided nature tours and camera safaris over snowmobile routes were tested in two pilot trips late in the season by Mr. Townsley. It is clear that winter visitors to scenic areas appreciate such guided tours as much as warm weather visitors.

The National Park Service has acknowledged the important role snowmobiling can play in winter recreation. In the Management Policies for the National Park Service by the Department of the Interior, 1978, they state:

> "In the coterminous United States, snowmobiles may be permitted in units of the National Park System as a mode of transportation to provide the opportunity for visitors to see and sense the special qualities or features of the park in winter."

Snowmobiling and Aesthetics

The last two decades have witnessed a marked shift in resource utilization policies. Where once land was managed to solely maximize productivity in the market place, now it is being managed for recreation, Wilderness and other non capital-intensive human and environmental considerations. Millions of people are rediscovering what was once taken for granted -- the beauty of nature.

This awareness of our natural surroundings has set up a confrontation between those who advocate extensive development and those advocating massive preservation. In the middle of the conflict stand the recreationists, trail bikers, campers, hikers, snowmobilers, wanting neither development that will further encroach on their all too few acres of recreational lands, nor preservation in the form of Wilderness that locks out many favorite pastimes.

Snowmobilers, and other outdoor recreationists, seek the same natural qualities as do the Wilderness advocates. They display initiative by leaving behind the easy chair and television for the challenge of outdoor activity in the winter snow. They appreciate and respect the environment, wishing to preserve its naturalness for others to enjoy. The typical snowmobiler's impact on the environment is as minimal as the machine he rides, as testified by Jack Anderson, Yellowstone's former superintendent:

> "Trash?--We experience almost no trash from the winter user. He is probably one of the best users of the Park and I think that every one of my rangers and maintenance people would verify that statement."

The pressure for competing uses of our resources continues to grow stronger. Management plans regarding land use should be sophisticated enough to minimize irreversible resource commitments and yet maximize fulfillment of human needs in all sectors. Public land use policy should take into account changing needs and priorities for the land, bearing in mind that our priorities ten years from now may be vastly different from the present.

Sound Emissions

Snowmobile sound levels have been reduced 94% in recent years. Snowmobiles produced since February 1, 1975 and certified by the Snowmobile Safety and Certification Committee's (SSCC) independent testing company emit no more than 78 dBA from a distance of 50 feet while travelling at full throttle when tested under Society of Automotive Engineers (SAE) J192a procedures. Additionally, all SSCC-certified snowmobiles produced after June 30, 1976 emit no more than 73 dBA at 50 feet while travelling at 15 mph under SAE J1161 procedures. Presently, approximately 90% of all snowmobiles produced for sale in North America are certified by SSCC's independent testing company as meeting these sound emission standards. An attached position paper elaborates on developments in this area.

A study conducted by the SSCC and the U. S. Testing Company for the benefit of the Minnesota Department of Natural Resources demonstrated snowmobile sound at various distances. A relevant portion of the study report follows:

> "The masking effect of trees was illustrated when two of the 1976 model snowmobiles were moved into the woods edge, on a course which led 1/4 mile beyond the crest. The trail proceeded through a dense stand of hardwoods that were bearing leaves. Snowmobile noises could not be discerned and could not be measured over the crest of the ridge."

All of this means that the earlier problem of excessive noise from snowmobiles is no longer a major concern. The governor of the State of New Hampshire, the Honorable Meldrim Thomson, Jr. had this to report to ISIA on August 9, 1977:

> "I am of the opinion that snowmobile noise is no longer a major source of problems here in New Hampshire. True, the early machines were associated with excessive noise; this naturally caused a problem, one that even the operators of the machines were not happy with.
>
> "From my own observations, and I am a frequent rider of our state trails, I no longer consider the noise a point of contention....I find the newer machines very acceptable and realize that future machines will have noise levels even further reduced in meeting our requirements and those of other states.
>
> "In answer to your question 'Should the Federal government preempt all state snowmobile noise regulations by issuing a Federal noise standard?', my answer is a firm NO."

Operated in a normal, considerate manner, the newer, quieter 78 dBA snowmobiles cannot be heard from inside a home. From a distance of 50 feet, new snowmobiles generate between 67 and 73 dBA at 15 mph. For comparison purposes, normal conversation at three feet produces 70 dBA.

Snowmobiles are now among the quietest powered vehicles. This reduction should be recognized in the plan because it facilitates simultaneous use of areas by several varieties of winter recreationists.

Compatibility with Other Recreation Forms

Because of the seasonal nature of the sport, snowmobiling is one of the most compatible of all recreation forms. Trails used by equestrians, bicyclists, hikers, and trail bikers are readily usable by snowmobilers in winter, as are roads not plowed or used during snow-covered periods. Surface preparation requirements are flexible and rudimental. More importantly, with the disappearance of the snow, traces of snowmobile activity are eliminated. Trail markings are the only substantial exception to this, and even these can be removed each spring if desired.

Compatibility with other wintertime recreational users is less complete. This does not imply conflict among users, though. Shared facilities--parking lots, toilet facilities, warming huts, and other such services--are easily arranged. Even limited joint-use can be made of certain access, or corridor trails with cross-country skiers. However, for safety purposes and to ensure maximization of the recreational experiences of each group, segregation of snowmobilers and cross-country skiers seems advisable.

Popular opinion tends to reflect the belief that snowmobilers and skiers are rivals. However, feelings of animosity are becoming increasingly rare as facilities for each sport are provided. The St. Paul Pioneer Press in its article of January 22, 1978, titled "Cross Country Skiers Gain Ground," quoted an official of Minnesota's Ski Touring Federation:

> "'The relations between the cross-country skiers and the snowmobilers never should have been bad in the first place,' Maloney said. 'The problem the skiers had in the beginning was not with the snowmobilers but with the state because of the way public lands were being allocated.'"

Throughout the snowbelt, "sno-traveller" clubs, comprised of skiers, snowmobilers and those who enjoy both sports, are developing. They cooperate in trail building and maintenance for each sport and

devote their combined energies to social events, to making winter a time of healthy fun for all.

In deciding on allocations between wintertime uses, several factors seem highly relevant. First, certainly much consideration must be given to the proportion of demand, measured in recreation visitor-days. Second, consideration should be given to providing highly desirable areas of use for each user group. Finally, in balancing availability of the land resource between uses, consideration must be given to those areas permanently closed to the snowmobiler, including current Wilderness areas, primitive areas, new Wilderness study areas and national scenic trails, which are open to wintertime non-motorized uses but not to snowmobilers.

Economic Impact

The impact of snowmobiling on snowbelt economies is rapidly gaining recognition. Snowmobilers in Canada and the United States spend over $1.8 billion on their sport annually, literally rejuvenating the economies of countless snowbound communities.

The Town of Webb, New York, a community once solely dependent upon summer tourism, found that the development of a trail system has attracted snowmobilers from 21 states and provinces. As a result, winter unemployment has declined 10% and winter commercial income during the height of the snowmobile tourist months (January/February) now equals summer income for a like period (July/August). In 1967 only six motels and restaurants were open during the winter months; now more than 50 are open, including three hotels.

Employees of Northwest Orient Airlines recently estimated that for every skier flying into Bozeman, Montana, to enjoy the fun of the popular Big Sky ski area, during the 1977-1978 winter season, three persons arrived on their planes to visit Yellowstone National Park by snowmobile.

Reporting on a statewide study of snowmobiling, the Chief of Planning of the Wyoming Recreation Commission concluded:

> "Snowmobiling not only pulls its own weight, but the potential tourism and winter-related economic impact are unbelievable in the Western United States. If just over 8,000 snowmobiles generated over six million dollars in the state of Wyoming in just one season, you can bet your boots that the people of Wyoming will be willing to invest a little of their tax money in such a going enterprise."

Snowmobiling is also responsible for "spin-off" economic benefits. The equivalent of more than 110,000 full-time jobs for North American citizens have been created. The jobs enable

citizens to further stimulate the economy through additional expenditures on goods and services and also provide significant income tax revenues to provincial, state and federal treasuries. Snowmobile-related businesses, (manufacturers, suppliers, distributors, dealers, resort and hotel facilities, etc.) contribute millions of dollars in corporate tax revenues. Approximately $85 million in sales and gas tax revenues are received each year by provinces and states directly from expenditures on the sport of snowmobiling.

The potential for positive economic effects from snowmobiling has not gone unnoticed by the federal government. The U. S. Department of Labor has grant programs that will fund snowmobile trail building projects to create jobs and encourage snowmobiling to help stimulate a slack winter economy. Under Title IV of the Comprehensive Employment and Training Act, snowmobile trail building projects have been funded. An example reported in CETA Title IV Project Description Report for the U. S. Department of Labor, June 1977:

> "The Rural Minnesota CEP Otter Tail Trails Association project provides for the development of a system of safe and scenic snowmobile trails to enhance the recreational opportunities in the community and to promote winter tourism. The project also lays the groundwork for the creation of cross country ski trails.
>
> "This type of project will be of greatest benefit to northern communities with summer resort areas, but it will also be worthwhile in other communities. Communities with resort facilities --restaurants, motels, clubs--will gain both recreational and economic benefits. The greatest benefit to other communities will be safer, more enjoyable recreational outlets for their residents....In many communities such projects would also contribute to environmental protection and reduce community disputes over trespassing violations."

The effectiveness of programs such as CETA comes from the emphasis that is placed on community involvement. A snowmobile trail building project is successful because it is coordinated with local land managers and existing trails. With the vast acreage under its management, we feel it is especially important to coordinate projects with Forest Service management plans. By working with the community, the development of a trails system can be better facilitated and grant programs will yield greater benefits. (2)

We believe this important aspect of snowmobiling should be considered by forest officials in their plans for Wenatchee National Forest.

2. This would be accomplished in individual project plans. It is being done on the Wenatchee National Forest.

Conclusions and Recommendations

The national policy of the U. S. Forest Service prescribes generally open access to forest lands by those electing ORV-based recreational endeavors. In this spirit, we believe the recommended Alternative 2 of the draft plan is correct in suggesting the imposition of only those restrictions deemed necessary for environmental protection. Of course, environmental, social and archaeological considerations will justifiably preclude total use. The Forest Service has traditionally displayed great wisdom in evaluating alternatives available under the multiple-use concept. On the basis of current needs for winter recreation opportunities, current provisions for snowmobile use should be continued and expanded except in such critical zones as big game yards and designated Wilderness areas already closed to motorized recreational use. Because of its unique characteristics, the snowmobile has been and should continue to be treated separately from all other motorized vehicles within recreation management plans for Wenatchee National Forest.

ISIA is highly involved in the land use planning processes of such agencies as the U. S. Forest Service and the National Park Service. Invariably, our reviews document the fact that the chief recreation-associated environmental concerns are attributable to excessive summertime usage. We believe snowmobiling offers an opportunity for significant additional environmental protection if used as a means to consciously alter traditional recreational patterns by encouraging a shift from peak-season recreational use to the remainder of the calendar year. Single season orientation compounds management costs and difficulties. We urge Forest management to adopt the imaginative programs involving snowmobiles in Spruce Woods Provincial Park and Yellowstone National Park as a possible way to ameliorate this pervasive problem.

We agree strongly with the recent comment of the U. S. Heritage Conservation and Recreation Service on the desirability of augmented winter recreation opportunities through snowmobiling:

> "There is a beneficial impact which snowmobiling shares with all other winter sports: When compatible with other land management goals winter recreation use increases the sustainable annual yield of recreation experiences (say visitor-hours) which can be obtained from a given area of land. This, in turn, may result in a more efficient use of labor and capital in both the public and private sectors."

The draft plan notes that participation in snow activities is growing at a rapid rate with snowmobiling as the most popular form of dispersed winter recreation. We believe the recommended

Alternative 2 is supportive of the needs of area recreationists by recognizing off-road vehicle use as an acceptable recreational activity. However, the most popular area for snowmobiling, Table Mountain, contains 11,000 acres which is currently inventoried by RARE II for possible designation as Wilderness. Should this area be designated as Wilderness, snowmobiling would be prohibited. The area contains ten miles of trails and eight miles of four-wheel drive roads and receives a moderate amount of use by snowmobiles and off-road vehicles. We feel with its current recreational value and "common variety" landscape covering over 75 percent of the area, Lion Rock Roadless Area should be managed for multiple-use and removed from any further Wilderness consideration.

In conclusion, we subscribe to the general concept of the recommended Alternative 2 of the draft plan. While the plan narrative does indicate a recognition of snowmobiling as a winter recreational opportunity, we urge the inclusion of further information in the final plan on snowmobiling to reflect full basis for snowmobiling-related land use decisions.

To provide you with further information on the sport of snowmobiling, we have also included a copy of the Snowmobiling Fact Book, an easy reference guide, and An Assessment of the Snowmobile Manufacturing Industry and Sport 1978.

We hope these comments and the enclosed materials are helpful to Wenatchee National Forest management efforts to provide maximum recreational opportunities while ensuring adequate environmental safeguards. We hope to have the opportunity to expand upon these thoughts in correspondence with you and your staff in the future.

Sincerely,

Derrick A. Crandall
Vice President
Government Affairs

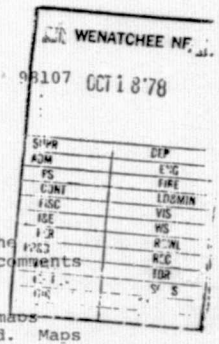
DAC/pms

Enclosures:

The Role of Recreation in the Life of Man
Sounds of Snowmobiling in Winter
Snowmobiling and Our Environment: Facts & Fantasies
Snowmobiling Fact Book
An Assessment of the Snowmobile Manufacturing Industry and Sport 1978

cc: Washington State Snowmobile Association

343 Northwest 46th
Seattle, Washington 98107
October 15, 1978



John L. Rogers, Supervisor
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47

Dear Mr. Rogers,
I have reviewed the Draft Environmental Statement on the Kittitas Land Management Plan and offer the following comments on its form, content, and the preferred alternative.

(1) The DES proposes specific land allocations and yet no maps of specific and highly important resources are included. Maps of such resources as soils hazards, timber productivity, elk winter range, grazing, and existing natural vegetation (including old growth forests) should be provided. The lack of these maps deprives the reviewer (and presumably the responsible official) of adequate data to make specific allocations.

(2) Similarily, a selection of photographs would assist in determining the appropriateness of the allocations. Highlighting particular management problems, these would be invaluble to persons new to the area, as well as those intimately familiar with these lands.

There were several references to Appendix G. However, I found only pages 1 and 2 of it in my copy. The additional data referenced (such as species lists) should be included in the DES.

(3) While timber appears to be a major concern in constructing the alternatives, no perspective was given to the Planning Units potential in relation to the surrounding lands. Tables (such as page 104) and numerous statementsabout the timber economy displayed only National Forest potential in the Planning Unit. Proper analysis demands that other N.F. timber and private timber production in the region be considered in determining actual impacts on log flow in Kittitas County.

The same problem also exist for recreation, roads and grazing.

(4) One other point needs to be made about the document. The cost of development is not addressed. The receipts for commodity exploitation are estimated, tabulated (even"hypthetical" figures, pp 104, 112) and analysed, but the costs of roadbuilding are not even mentioned.

The major deficiencies in the alternatives presented involve the lack of truly roadless natural area management, outside Wilderness or Research Natural Area designations. Both Management areas C and D have loopholes large enough to drive a logging truck through.

1. All of the maps or overlays used in developing Management Areas and Alternatives are available for review at the Wenatchee National Forest Supervisor's Office. Small scale resource overlays would not be very accurate and large scale overlays would be too costly. From the standpoint of sheer bulk, it is not possible to include all such materials in the Environmental Statement.

2. A slide program was developed and shown at public meetings on the Draft Environmental Statement. However, from the standpoint of cost, it is not possible to include photographs in the Statement.

3. Pages 8 through 11 of the Final Statement discusses employment, income and timber production in the local and Regional area.

4. This is beyond the scope of this Plan. These costs will be addressed in the Wenatchee National Forest Land and Resource Plan under the guidelines of the National Forest Management Act of 1976.

Management direction for Area D (p A-10) should prohibit construction of additional roads, leaving only existing primitive roads. Timber harvesting should only be allowed for salvage of catastrophic losses. Where road access across "D" to private lands is contemplated (p 74) USFS acquistion should be accelerated.

(5) Management Area C is no better. "minimum road access" would allow a network extensive enough to put any point in the management area no more than ¼ mile from a road. This certainly not a roadless designation, as it should be. With the existing difficulties in enforcing road closures and ORV restrictions, I seriously doubt the feasibility of those portions of the management direction that proposes to do that. The only way to limit motorized access is to not build additional roads. I suggest that "C" be revised to a truly roadless area withonly existing roads maintained.

While I find portions of the preferred alternative acceptable, it needs considerable improvement.

The Research Natural Area is essential and I fully support the USFS proposal for its formal designation. Including more of the creeks drainage should be considered to better protect the natural ecosystem found there.

Efforts to protect elk population, inconjunction with the Washington State Department of Game appear adequate. Other forms of wildlife deserve the same degree of attention and concern.

Additional portions of the RARE II areas need to be retained as roadless in the Eastern Sub-unit. Also additional lands in the Taneum-Manastash-Cascade Crest area need to be retained in a natural state.

The preferred alternative needs to be stronger on land adjustments. In the Eastern Sub-unit USFS retraction should only be as far north as Benchmark 6742 (as in Alt. 3).

In the West, Burlington Northern's proposal for USFS retraction (p 13) is unacceptable. While some adjustment is needed, no major retraction in the Manastash-Taneum-Naches-Cascade Crest area should be considered. The goal outlined in Alternative 2 are a good start, but need to emphasize blocking up NF ownership in these sensitive areas.

The preferred alternative should include allocation to Management Area E. Protection of old-growth forest is R-6 policy and needs to be reflected in this unit plan.

The final issue I wish to discuss is the Pacific Crest National Scenic Trail. The proposal provides no where near adequate proteciton for the trail and its environs. The proposed reduction (6) of VRM objectives can not be tolerated. Here, where the trail is most threatened, is precisely where strong VRM management is required. To allow poor management of adjacent private lands to dictate USFS practives is to abdicate USFS responsibility. This proposed action must be changed.

There is no need for the trail to suffer any more abuse, in order for travellers to experience a varitey of management. Multiple abuse is evident on far too many trails, including the PCT. Every effort should be made to minimize it for this National trail. Must we remind the USFS that this is a National Scenic Trail, and that the rampant clearcutting threatening and in some places overwhelming the trail is not a goal of the trail. Avariety of management practices can be viewed from the trail now. We need not push clearcutting to the very right of way to provide that questionable experience, that the USFS seems to think it has a mandate to do.

At a minimum, I would suggest a wide (1 mile or more) corridor along the crest be placed in a Managment Area D type strategy with no roads. (roads are certainly not compatible with trails). Acquisition of private lands must be pursued vigorously, to ensure adequate protection of this national resource.

I would urge you to revise the FS and preferred alternative to better reflect the needs of roadless areas and the protection of the PCT.
Thank you for this opportunity to comment on the DES. Please send me a copy of the FES when it is published.

Sincerely,

Charles C. Raines

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5. The "minimum road access" objective was intended as a seasonal program to improve opportunities for an unroaded hunting experience. This is not a roadless designation nor do we think it should be. We do not believe that "difficulties in enforcing road closures" should mandate that such direction be abandoned. Our intention is to continue to work closely with the public, adjacent landowners and other Government agencies and through involvement and education gain understanding and acceptance. There are many examples around Region 6 where such a formula has produced excellent results.

6. The minimum VRM objective in this area is Modification. Any site specific project in this area will consider the environmental effect it has on all resources and the PCNST. In many areas the VRM Modification objective will be exceeded.

SIERRA CLUB .. CASCADE CHAPTER

c/o 9111 S.E. 44th, Mercer Island, WA 98040

October 17, 1978

SUPR	DEP
ADM	E G
PS	FIRE
C M	LOGGING
HSC	VIS
	WS
	R WL
PPSO	RCC
	WR
	S

John L. Rogers, Supervisor
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Wenatchee, Washington 98801

48

Dear Mr. Rogers,

The Cascade Chapter has reviewed the Draft Environmental Statement on the Kittitas Land Management Plan. This unit has significant resources, such as wildlife, trails and roadless land, that deserve sensitive management.

The plan deals carefully and thoughtfully with elk populations. In conjunction with the Game Department this should provide a viable management of this resource.

Other species were addressed but not given as much attention in land allocations. We endorse retention of significant areas of old growth forest for certain of these species. Management Area E (as outlined in alternative 3) should be included in the preferred alternative.

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Substantial portions of the Planning Unit are de facto Wilderness, and are presently roadless. Major parts of the RARE II areas, Naneum and Lion Rock, as well as large areas in the Manastash Ridge, Taneum Creek, and Cascade Crest region should remain roadless.

While management areas C and D allude to primarily roadless and natural area management, in actuality no roadless protection is given. This is due to the vague language that allows almost any roadbuilding in these areas. Both these designations should be strengthened so that only existing roads will be permitted. Timely acquisition should obviate the need for access to private lands across C or D. Timber harvesting should also be closely controlled in C and only salvage allowed in D. With these improvements in management direction we could support using these designations on this planning unit. (1)

The land adjustment proposal in Alternative 3 should be adopted as an interim plan. While some retraction in the West Subunit may be desireable, eventual blocking up of USFS ownership in the Upper Naches, Taneum, Manastash and Cascade Crest should be pursued. The Burlington Northern proposal is not acceptable.

Of particular concern in this regard is the Pacific Crest National Scenic Trail. The USFS seems to have abandoned this trail to

" not blind opposition to progress, but opposition to blind progress"

1. Neither Management Area C nor D were intended to be "roadless". In Management Area C, "limited road access" would be achieved through a program of road and/or area closures to public vehicular traffic during hunting season. From a future standpoint, however, the completely developed road system in Management Area C would be approximately the same as that required for Management Area A. The silvicultural objective of timber cutting in Management Area D is to improve conditions for dispersed recreation and to create or maintain wildlife habitat diversity. An 80 percent falldown in timber yield is estimated under this scheme. The consequence would be fewer roads than in areas managed for intensive timber production but not a true roadless situation.

the management of adjacent private landowners. We cannot accept any plan that degrades this trail corridor on USFS land to make it similar to poor management on private lands. The USFS is mandated to take the lead in protection and mangement of this national resource, not to follow quiescently whatever is proposed on interspersed ownerships.

It is obvious that immediate acquisition of those 18 or more sections of land through which it traverses is necessary.

We do not find cogent the USFS premise that the PCT was established so hikers and horsemen could travel through clearcuts and along logging roads. These are unfortunate intrusions that should be avoided not encouraged. The USFS proposed management of the Pacific Crest Trail Corridor is thus, totally unacceptable.

We support the establish ment of the Research Natural Area, but are concerned that it may be too small to protect the natural ecosystem.

(2) The Statement itself needs to include maps of the various resources such as timber site class, soil erosion hazard and wildlife habitat. These are essential to adequately review the alternatives presented.

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Also the amount of timber available form the various alternatives needs to be placed in proper perspective. It is obviously supplemented by private and other National Forest timber in (3) the remainder of Kittitas County. In that light, the differences in the laternatives' output appears small, and insignificant on a statewide basis.

In summary, we find the preffered alternative deficient in several areas. It should include additional old growth protection (Management Area E), strengthened roadless protection in C and D, improved land adjustment plans and substantially improved protection for the Pacific Crest Trail.

Sincerely,

Thomas H.S. Brucker
Acting Conservation Chairperson

2. Please refer to reply #1 to input #47.

3. The Alternatives deal only with the resources on National Forest Land and the Kittitas Planning Unit. The outputs of the Planning Unit are not very significant on a State-wide basis, page 50, F.E.I.S.

NORTHWEST PINE ASSOCIATION

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October 26, 1978

Mr. John L. Rogers, Supervisor
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49

Dear Mr. Rogers:

Northwest Pine Association submits these comments for your consideration in preparing the final environmental statement for the Kittitas land management plan.

1. Resources Planning Act (RPA)

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(1) The plan claims to be consistent with the interim guidelines of the National Forest Management Act. However, there is no attempt to comply with the Act since RPA goals are only paid lip service and are addressed in a broad and general manner. These goals are intended to set the framework for which National Forests are managed. However, RPA goals cannot provide specific guidance, the planners say, because the goals have not been disaggregated to the individual forests. Also, since the Kittitas Planning Unit makes up only 12% of the forest, there is a feeling that a comparison to the goals would be meaningless.

This seems to indicate that the planning unit is too small to be responsive to national needs. However, at this point, combining it with adjacent planning units would be unfeasible. I suggest that the plan incorporate a range of specific RPA goals as has been done on the Klamath and Malhuer National Forests for timber planning. Since the unit is "heavily used for most types of dispersed recreational activity," it is important to evaluate if the planning unit is supplying its share of the dispersed recreational goal as well as the goals for timber, range, wildlife, etc. This exercise would also show whether some goals were being met or exceeded at the expense of others.

2. Planning Unit Goals

(2) The draft statement says, "...present management within the Unit is complicated by non-specific land management goals" (emphasis added). The items listed on page 49 fall short of defining goals in a detailed manner so that the performance of the preferred alternative can be objectively evaluated.

1. We believe that our rationale in relating the Planning Unit's responsiveness to RPA goals is sound at this point. By 1985, the Forest must complete a Forest Land and Resource Plan as required by Section 6 of the National Forest Management Act of 1976. This process will include the assignment of quantified renewable resource goals and objectives to the Regional and Forest level. The capability of the Forest to achieve these goals and objectives will then be measurable.

2. For purposes of this Plan, a goal can be defined as a concise statement of the desired state or condition that a land and resource allocation policy is designed to achieve. These goals are not designed to be specifically quantifiable in most cases. Throughout the Plan you will note that a comparison of the relative ability of the Alternatives to satisfy these goals has been made in terms of resource outputs. You will also note that the preferred Alternative of the Draft and Final Statements are judged to meet all of the goals for the Planning Unit. Thus we do not believe that unwanted constraints are placed on one goal in order to ensure the achievement of another.

You want to provide "more opportunity for livestock grazing:" how much more? "Emphasize dispersed recreational activities:" backpacking or four-wheeling? How many visitor days? With the set of non-specific goals proposed for the planning unit, I fail to see how future management will be any less complicated than present management. True, a land management plan deals primarily with allocations of areas to different uses and does not directly concern itself with specific output levels to the extent that, say, a timber management plan would. However, failing to define and recognize more specific output goals in the land management plan allocations may cause misguided and unwanted constraints to be placed on the production of certain resources ranging from timber to recreation.

3. Natural Resources and Present National Forest Situation

(3) Both returns to the federal treasury and to Kittitas County are shown on page 112 but they should be discussed in the local communities section. Also, the number of jobs directly and indirectly supported by the planning unit should be included in this section.

(4) The plan mentions that a non-point water quality monitoring program is conducted throughout the unit to inform managers of pollution sources. What are the quantitative water quality impacts occurring on the unit; what are the results of the monitoring program; which current measures is the Forest Service taking to mitigate water quality impacts; and how effective are these measures?

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(5) Since the DES says, "Timber Management Planning depends upon land management decisions provided in the Land Management Plans," the land management plan should include how its allocations will influence the standard, special, marginal and unregulated acres. These are mentioned in the glossary but they appear nowhere in the text. Admittedly, these will be approached with more detail in the timber management plan but it would help to identify how many acres will be assigned to the different timber land classifications. This has been done for the Oregon Butte Planning Unit and for other planning units in the Region.

4. Management Areas and Elk

(6) The planners recognize that "Elk are the most important species in terms of population and hunter attraction." However, the DES indicates that limited numbers of elk are actually found on National Forest lands because large acreages of elk habitat occur on private lands within and adjacent to the unit. Optimum elk habitat is composed of approximately 20% hiding cover, 20% thermal cover and 60% forage areas. Although more hiding and thermal cover might be provided by the Forest Service, their current timber and wildlife management practices seem to be less effective than private practices in promoting the population of the unit's most important species. The Forest Service proposes two different management schemes to enhance the elk production of the unit. Management Area B has the objective of maintaining as nearly as possible ideal cover-forage conditions for elk on winter ranges. Management Area C will provide and maintain optimum elk cover requirements and will provide conditions which offer opportunities for

3. These employment figures are averages for the Forest Products industry. They relate directly to the timber outputs projected for each Alternative. The local community section deals more with the existing situation.

4. These items were added to the Statement under Mitigation on page 133.

5. You are correct. This information would have been included in the Forest Timber Management Plan. An intensive timber reinventory has just been completed. It will now be incorporated into the Wenatchee Forest Land and Resource Plan. Timber estimates on standard, special, marginal and unregulated acres based on the existing outdated Timber Management Plan would be a futile effort at this time.

6. The bulk of the critical winter range is not within the Planning Unit boundaries. However, most of the elk calving areas and summer range are on National Forest land. Each is important in sustaining a healthy elk population. Some portions of Management Area A now have and will continue to have optimum elk habitat. The elk calving areas and winter cover needs in Management Areas B and C differentiate them from Management Area A.

unroaded big game hunting. Both management areas supposedly produce double the elk per acre over any other management area. Since the private lands generate more elk than Forest Service lands, and since Management Area A most closely resembles private management practices, we are not convinced that Management Areas B and C are twice as effective for elk production.

In referring to Timber/Wildlife Relationships in the Blue Mountains of Washington and Oregon, crown closure must exceed 70%, and dominant trees should be 40 feet tall to provide thermal requirements for elk. The DES says that Area A will average 75% crown closure. Management Area A will also have, on the average, 200-400 trees per acre for up to 30 years. The study previously mentioned found that 250 trees per acre is the minimum number needed for hiding cover. Also, 20% of the forest must be in hiding cover conditions for optimum elk habitat. With the intensity of management and 130-year rotation associated with Management Area A, the result would be a "planned balance of open forage areas to timber areas (cover) uniformly distributed through the elk range," as pointed out in the DES. The planners also say that management in Area A will strive to obtain optimum elk conditions but in their next breath say, "Optimum elk conditions will occur infrequently because of the efforts to grow trees." This contradiction is not consistent with the scientific findings stated above nor does it agree with the fact that more elk are found on adjacent private lands. (7)

5. More Management Area Comments

Another concern of the Forest Service was to provide primitive hunting opportunities. We agree that primitive hunting is desirable but think that the Forest Service is not taking advantage of the most efficient way to achieve this goal. Management Area A, which produces the most timber, could also provide primitive hunting opportunities. Road closures could be used as a management tool in this area to enhance primitive hunting. There would be no decrease in timber production as compared to the 25% decrease occurring in Management Area C. As stated before, optimum elk production could be achieved also in Management Area A.

An 80% falldown in the estimated timber yield will occur in Management Area D. This is done so that recreational activities can be complemented and enhanced. Yet, of the seven land use designations considered in the draft environmental statement, Management Area A provides the greatest opportunity for increasing recreation. The Forest Service has misled the public into believing that Management Area D is necessary for providing recreational opportunities other than hunting. However, its own figures in Table 7 on page B-19 of the DES show otherwise. Snowmobiling, motorbike riding, four-wheel driving, hunting, gathering forest products and driving for pleasure are all accommodated best in Management Area A.

What about hiking, horseback riding and primitive camping: aren't they valid uses of the Forest? Indeed they are, but devoting over 21,000 acres to Management Area D where these uses are greatly emphasized seems too excessive. Within 15 miles of the planning unit, there already exists 80,000 acres to provide the recreational opportunities just mentioned. The block of land is called the Alpine Lakes Wilderness Area and provides a (8)

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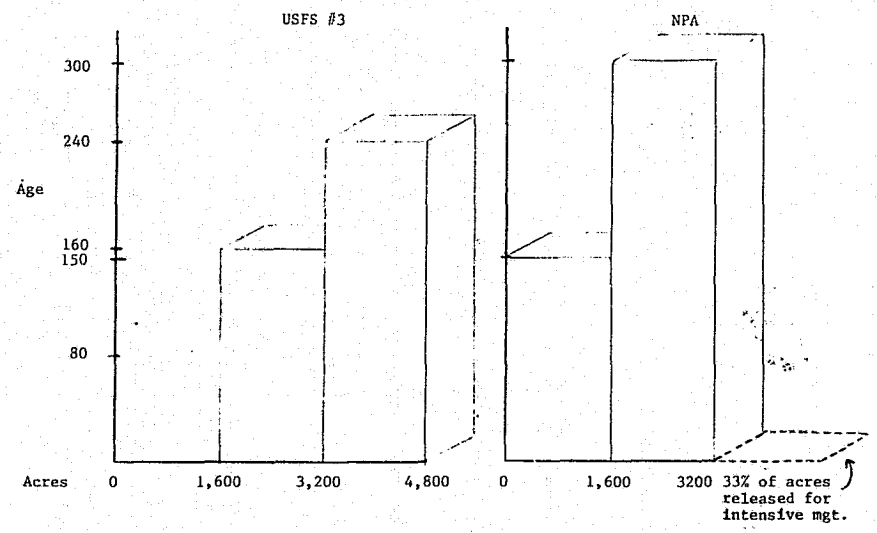
7. Much of the elk habitat is on private land and off the Planning Unit. Optimum elk cover to forage conditions must be planned. Some optimum conditions of forage to cover including size and shape may accidentally occur in Management Area A but there is more likelihood that the forage areas will be too large, not spaced or shaped right and in the wrong locations in relationship to the cover patches.

8. Installation of convenience facilities such as tables, firegrates, hitch rails, toilets, corrals, etc., are permitted in Management Area D in addition to ORV use in a natural appearing environment. This type of recreational facility is not available in the Alpine Lakes Wilderness.

higher quality of hiking, horseback riding and primitive camping than does the planning unit. Management Area D's "near natural and dense stands of timber will be more favorable to the build-up and spread of certain damage-causing insects and disease. Heavy fuels will tend to accumulate with a consequent higher resistance to control when fires occur. These natural forces could spread into intensively managed areas such as Management Area A." Isn't it ironic that we have to let natural catastrophies dictate when we harvest in Management Area D?

The objective of Management Area E is to provide old-growth habitat for dependent wildlife species. This is fine, but the Forest Service says that three times the actual acreage needed by the wildlife species must be devoted to old-growth management. They reason that once the old-growth is cut, the wildlife must have a similar timber stand to move into. We agree, but the 240-year rotation currently used as a planning guide should be increased to 300 years. This change would supply nearly 150 years of old-growth habitat compared to the existing 80 years. Of course, by letting the trees grow to 300 years, a greater loss in yield will occur from the stand due to decay and rot (37% versus 30%, using Forest Service data). However, this loss will be more than offset by the gain in production which results from releasing one-third of the previous old-growth acreage for normal or intensified management (see Page 12). Wildlife species can be provided with the same number of acres of old-growth habitat they depend on (1,600); it is just that fewer additional acres need be tied up in growing the necessary habitat. For example, using a 240-year rotation, the planners have determined that 4,800 acres are needed to produce old-growth habitat. However, with a 300-year rotation, only 3,200 acres are needed. The figure below shows the difference.



Note that 1,600 acres in both alternatives is always in mature or old-growth conditions needed by associated wildlife species.

6. Research Natural Area (RNA)

The alternatives give the public no choice in the matter. In every case, a 1,200 acre Research Natural Area will be established. The DES indicates that there are several existing RNA's in "fairly similar zones in Washington and Oregon." There currently is no representative RNA in North-Central Washington, but what and who determines the extent of the RNA system? Will we need a subalpine dir RNA in North, Middle and South-Central Washington? The preservationists claim that wilderness areas have the benefit of providing research and educational opportunities. Even the Research Natural Area Needs publication by the Forest Service says that wilderness can serve these purposes. How does the present Alpine Lakes Wilderness Area fill this need? I am not convinced by information given in the DES that a subalpine fir RNA is really necessary. (9)

Furthermore, the Forest Service claims that existing vegetation and wildlife habitat will be maintained in the RNA by excluding management activities. However, placing administrative boundaries around an area does not mean that the current ecosystem will be preserved. Natural processes and succession continue in the absence of management. If the Forest Service truly desires to preserve this ecosystem, designating the area as an Experimental Forest in which management activities could be controlled and monitored to maintain the current ecosystem, would be more helpful.

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7. RARE II

The Kittitas plan does the best job I have seen so far of relating the unit's roadless areas to the national RARE II process. However, the addition of the DORS scores and a list of how many other areas are available to meet the ecosystem targets in the DES should be shown. There are nine other roadless areas which can satisfy the Western spruce fir forest ecosystem target. (10)

8. Recreation and Visual Management

The hikers along the Pacific Crest Trail are exposed to a discontinuity of visual experiences. Timber production activities dominate over the natural setting. The Forest Service should not acquire the private lands, and they say that rerouting is unfeasible. Therefore, we favor changing the visual standard along the trail to modification. If a higher scenic quality objective cannot be achieved because of adjacent private land management practices, the Forest Service would not accomplish anything by adhering to a stringent scenic quality standard. As the DES indicates, this would be in line with directions found in "The Pacific Crest Trail: Guide to Location, Design and Management."

The draft refers to the use of Visual Absorption Capability (VAC) ratings. We feel they are redundant. Lands are already identified by the Visual Management System as needing preservation, retention or partial retention. (11)

9. The proposed Research Natural Area land allocation has been deleted from Alternative 7.

10. We have updated and expanded to some extent the sections of the Final Environmental Statement dealing with RARE II. However, we believe it would be unnecessarily repetitive to include everything in RARE II that deals with the roadless areas in the Planning Unit. The RARE II documents are available for public review if such information is desired.

11. VAC refers to the relative capability of a tract of land to withstand or accept vegetative manipulation without affecting its visual character (see Glossary). It provides the land manager with a useful tool for determining which visual situation will be the most difficult to work in. It is not a new standard and does not by itself create management restrictions.

Forest management activities are required to be consistent with these classifications, and a new scheme such as the VAC ratings seems to be a needless duplication of effort which may impose additional unnecessary restrictions on management.

Finally, Off Road Vehicle (ORV) use takes a back seat to all other uses in this plan. In almost every alternative and management area, "All conflicts between the existing Wenatchee National Forest ORV plan and this Land Management Plan shall be resolved in favor of the objectives and direction established herein." If this is to be the case (and we do not believe that it should be), then the draft environmental statement is totally inadequate in considering ORV land use needs. Hiking and the Pacific Crest Trail are given much emphasis but little thought has been given to the way in which ORV's fit into the picture. If the Land Management Plan will change existing ORV use, we would like to know where and how much. Also, does the Forest Service plan to satisfy the demand for ORV use in light of the lost recreational opportunities. (12)

9. Specific Comments

On page B-11, the second and fourth division signs appearing on the page should be multiplication signs. (13)

In the timber section of Appendix B, there is a need to clarify the distinction between nonproductive, low-productive and commercial forest land. Page B-27 shows low-productive forest land able to produce only 110 board feet per year whereas commercial forest land produces 161 board feet per year. This would actually make the low-productive land fit the category of nonproductive. A ratio of eight is rather high to use for converting cubic feet to board feet in defining commercial forest land. (14)

The detailed information on wildlife and snags on pages A-8 and A-9 would be better placed after page G-9. (15)

Throughout sections VI, VII and VIII, there is really no specific reference to the preferred alternative. The final environmental statement should focus more on how probable adverse environmental effects (VI), relationships between short-term uses and long-term productivity (VII), and irreversible and irretrievable resource commitments (VIII) relate to the alternative which will be implemented. (16)

Land types, streamside management units and visual management areas are mentioned continuously in the DES. With the exception of a list of roads with high visual resource concerns, nowhere does the draft indicate the location of sensitive streams or different land types. (17)

10. The Preferred Alternative

The Forest Service alternative is favored predominantly for two reasons. First, 21,000 acres are devoted to the emphasis of dispersed unroaded recreation. Secondly, the alternative manages elk habitat to sustain a balanced mix of forage and cover.

12. The sections on ORV use have been revised to clarify these issues.

13. This has been noted.

14. Please refer to comment #1 on response #39.

15. This was done. The tables are on pages F-11 and F-12.

16. The analysis should treat all Alternatives in equal depth. However, we have identified the preferred Alternative better in the Final Environmental Statement.

17. We are including a visual resource map for the preferred Alternative with the Final Environmental Statement. Land types (soils) and streamside management units are displayed on overlays which are available for review at the Wenatchee National Forest Supervisor's Office. Due to sheer bulk, it is impossible to include all such items in the Statement.

Northwest Pine Association cannot agree with the Forest Service's selection nor can we support any of the other alternatives presented. We have developed our own alternative which exceeds the production potentials for every resource appearing in the preferred alternative. Our alternative not only has the ability to provide more wood but also can produce more water, forage, elk and dispersed recreation than the preferred alternative (see Page 8, Appendix 1). These outputs result from two modifications of the draft's alternative #3, "wildlife." First, 5,000 acres proposed for management under Area C were moved to Management Area A. Second, the old-growth rotation was lengthened to 300 years. The extended rotation still provides the same amount of necessary old-growth habitat but releases for normal management uses 33% of the acreage devoted to growing the habitat.

(18)

These changes result in a timber output of 13.5 MMBF, an increase of 1.3 million compared to the preferred alternative. However, even with this higher level of timber production, the alternative still provides for protection of the streams and visual quality in the planning unit. There are the same kind and number of streamside management units and visual management acres in both alternatives.

By utilizing road closures in Management Area A, and with the amount of acreage devoted to Management Areas C and D, elk habitat will sustain a balanced mix of forage and cover while unroaded hunting experiences will also be provided by our alternative. These conclusions are drawn by using Forest Service assumptions about timber management and wildlife relationships which we previously have stated are open to debate. If our concerns with these assumptions are valid, then the elk production can be increased on the planning unit even more.

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Unroaded dispersed recreation does not receive as much emphasis in Northwest Pine's alternative but it is not ignored. Management Areas B, C and E contribute most to furnishing this type of recreation; and when the alternative is evaluated as a whole, we think it more than provides enough unroaded recreation to satisfy the planning unit goal.

In fact, considering the availability of unroaded dispersed recreation in the nearby Alpine Lakes Wilderness Area, and that our alternative supplies more of the other resources including dispersed recreation than does the Forest Service's, we believe we have come closer to achieving Gifford-Pinchot's goal to manage the National Forests for "the greatest good, for the greatest number, in the long run."

I hope that these late comments on the draft can still be helpful in preparing the final environmental statement. Thanks for the opportunity to provide input.

Sincerely,

Scott Horngren
Scott Horngren
Land Management Planner

Jim O'Donnell
Jim O'Donnell
Executive Vice President

SH:JO:klm

18. The NWPA Alternative has been analyzed as a viable option. Although the proposal definitely has some merit, particularly in terms of increasing timber output while maintaining a high level of quality wildlife habitat and dispersed recreation output, we do not believe it offers the overall benefits that would accrue from the preferred Alternative of the Draft or Final Statement. Our reasoning for this decision is as follows:

a. Dispersed recreation outputs are estimated to be 238.4 MVD/year. This is slightly higher than the preferred Alternative of the Draft (238.2 MVD/year) and slightly lower than the preferred Alternative of the Final (239.3 MVD/year). However, our concern is not with the amount of dispersed recreation, but with the type. Since Management Area D is not included in the NWPA proposal, most recreation would be of the road-oriented type. The public has expressed a strong concern for preserving some of the Planning Unit in a more natural setting where non-road oriented recreation would be most prevalent. We don't believe that Management Areas B, C and E, even when coupled with road closures in Management Area A, would satisfy this demand.

b. When the NWPA shifted 5,000 acres in the West Subunit from Management Area C to Management Area A, the shifts were made on the basis of timber productivity rather than logical Management Units. The result is 5,000 acres of Management Area A "spotted" all around Management Area C. These small and scattered blocks of Management Area A would be difficult to manage and would probably infringe on the management of surrounding C areas. A point we have strived for in the Draft and Final Statement was to allocate land in logical and manageable blocks.

c. The preferred Alternative of the Final Statement does not propose an allocation to Management Area E as included in the NWPA Alternative. Our basis for this decision was the amount of old growth that would be provided in SMU and visual areas, plus Management Area D. We believe it is more than sufficient to meet the habitat needs of old growth dependent wildlife species.

COMPARISONS OF RESOURCE PRODUCTION POTENTIAL

POTENTIAL OUTPUTS	N.P.A. 1 Commodity	2 Preferred	3 Modified Wildlife	4 Mix	5 Amenity	6 Present Management
Wood (MM Bd. Ft./Yr)	14.0	12.2	13.5	12.1	11.9	13.2 1/
Water (M Acres Ft./Yr)	314.7	304.3	311.9	306.3	310.7	271.2
Forage (AUM)	1718	1515	1633	1509	1460	1508
Dispersed Recreation (M Visitor Days/Yr)	248.2	238.2	238.4	237.0	215.3	215.0
Wildlife (Elk Numbers)	1106	1296	1376	1346	1376	1091
Visual (M Acres)						
Preservation	1.2	1.2	1.2	1.2	1.2	0
Retention	10.5	10.5	10.5	10.5	22.0	13.5
Partial Retention	58.9	58.9	58.9	58.9	48.6	61.5
Modification	38.5	38.5	38.5	38.5	37.2	34.1

1/ Does not consider present day visual and stream management constraints, or RARE II impacts. Reductions in yield, for RARE II Areas would result in a potential yield of 11.4 MM board feet for the unit.

NOTE: With the exception of the timber output, all resource outputs occurring in Northwest Pine Association's Alternative are calculated in Appendix 2.

TOTAL PRODUCTIVITY
(EAST & WEST SUBUNITS)

	USFS #3	NPA
Mgt. Area A		
Acres	72,594	77,594
Total Productivity	11,292.77	12,631.97
SMU 30% Yld. Reduction	42.99	48.84
VRM 25% Yld. Reduction	113.41	113.41
VRM 10% Yld. Reduction	516.00	607.00
Net Yield	10,620.37	11,862.72
Mgt. Area B		
Acres	1,622	1,622
Total Productivity	236.25	236.25
SMU 30% Yld. Reduction	2.90	2.90
Subtotal	233.35	233.35
20% Yld. Reduction	46.67	46.67
Net Yield	186.68	186.68
Mgt. Area C		
Acres	32,022	27,022
Total Productivity	3,090.28	1,751.08
SMU 30% Yld. Reduction	13.55	7.70
Subtotal	3,076.73	1,743.38
25% Yld. Reduction	769.18	435.85
Net Yield	2,307.55	1,307.53
Mgt. Area E		
Acres	1,618	1,618
Total Productivity	398.80	398.80
30% Yld. Reduction	383.47	
37% Yld. Reduction *		294.48
Net Yield	15.33	104.32
Research Natural Area		
Acres	1,197	1,197
Net Yield	0	0
GRAND TOTAL - NET YIELD (MBF)	13,129.93	13,461.25
ROUNDED (MMBF)	13.1	13.5

Note: (a) Yield reduction and productivity figures appearing in NPA's alternative are taken from calculations on pages 10-12.
(b) Yield reduction and productivity figures appearing in U.S. Forest Service Alternative #3 are taken from the DES.

NET YIELD PRODUCTIVITY CHANGE RESULTING FROM
A SHIFT OF ACRES FROM MGT. AREA C TO MGT. AREA A
(Note: ALL changes occur in the West Subunit)

Mgt. Area	Alternative	
	USFS #3	NPA
	Acres	
A	72,600	77,600
B	1,600	1,600
C	32,000	27,000
D		
E	1,600	1,600
F		
R.N.A.	1,200	1,200

SPECIFIC ACREAGE CHANGES

	Alternative			
	USFS #3		NPA	
	Acres	Productivity	Acres	Productivity
Mgt. Area A				
NP	2,251	0	2,251	0
H	6,594	2,307.90	7,486	2,620.1
M	20,138	5,034.50	24,246	6,061.5
L	8,162	897.82	8,162	897.82
	37,145	8,240.22	42,145	9,579.42
Mgt. Area C				
NP	7,118	0	7,118	0
H	892	312.20	0	0
M	5,083	1,270.75	975	243.75
L	6,727	739.97	6,727	739.97
	19,820	2,322.92	14,820	983.72

STREAM SIDE MANAGEMENT UNIT (SMU) CHANGES

	Alternative			
	USFS #3		NPA	
	Acres	Productivity	Acres	Productivity
Mgt. Area A				
NP	25	0	25	0
H	335	117.25	355	124.25
M	87	21.75	137	34.25
L	39	4.29	39	4.29
	486	143.29	556	162.79
Mgt. Area C				
NP	19	0	19	0
H	20	7.00	0	0
M	62	15.50	12	3.0
L	206	22.66	206	22.66
	307	45.16	237	25.66

NPA Alternative SMU 30% Yield Reduction 162.79 x .30 = 48.84
25.66 x .30 = 7.70

VISUAL RESOURCE MANAGEMENT (VRM) CHANGES

	Retention	Partial Retention	Modification
USFS #3			
Management Area A	4,273	17,036	15,826
Management Area C	146	10,372	9,302
NPA			
Management Area A	4,273	20,036	17,836
Management Area C	146	7,372	7,302

VRM 25% Reduction (retention): Same in both #3 and NPA alternative because no retention acres are moved from Management Area C to Management Area A. Therefore, reduction equals 113.41 Bd.Ft./Ac/Yr as before.

VRM 10% Reduction (partial retention): Background data was not available in the draft statement to make a specific calculation. We therefore used a proportion for calculating the reduction based on the amount of partial retention acres in our alternative compared to the amount in the preferred and wildlife alternatives. The figures appear below:

Alternative	1 Commodity	NPA	2 Preferred	3 Wildlife
VRM 10% Yield Reduction (Bd.Ft./Ac/Yr)	715.07	607.0	559.26	516.00

REDUCTION OF MEAN ANNUAL INCREMENT (MAI)
FOR OLD GROWTH MANAGEMENT
OCCURRING FROM A 300-YEAR ROTATION
IN REVISED MANAGEMENT AREA E *

Site	Acres	MAI Normal Rotation (Bd.Ft./Ac/Yr)	MAI Old Growth Rotation (Bd.Ft./Ac/Yr)	Total Productivity (Acres X MAI) Normal Rotation (Bd.Ft./Ac/Yr)	Total Productivity (Acres X MAI) Old Growth Rotation (Bd.Ft./Ac/Yr)
High	755	350	220	264,250	166,100
Medium	283	250	157	70,750	44,431
Low	580	110	69	63,800	40,020
	1,618			398,800	250,551

AVERAGE MAI

Normal

$\frac{398,800}{1,618}$ = 246 Bd.Ft./Ac/Yr

Old Growth

$\frac{250,551}{1,618}$ = 155 Bd.Ft./Ac/Yr

REDUCTION IN MAI DUE TO OLD GROWTH MANAGEMENT

246-155 = 91 Bd.Ft./Ac/Yr

% Reduction $\frac{91}{246}$ 37%

91 Bd.Ft./Ac/Yr X 3,236 Acres = 294.48 Bd.Ft./Ac

REVISED PRODUCTIVITY FOR MANAGEMENT AREA E

Total Acres	1,618
Total Productivity	398.80
37% Yield Reduction	294.48
	104.32

* All data obtained from Kittitas draft environmental statement and Wenatchee National Forest staff

CALCULATION OF DISPERSED RECREATION

We simply took our proposed acreage allocations and multiplied them by the visitor days per acre for each type of recreation. We used exactly the same procedure which the Forest Service used on pages B-18 through B-24 in the draft environmental statement.

Mgt. Area	Visitor Days/Yr.
A	179,164
B	2,964
C	52,558
E	2,964
Res. Nat. Area	733
GRAND TOTAL	238,383
M Visitor Days/Year	238.4

CALCULATION OF FORAGE OUTPUT

In the west subunit, the Forest Service has determined that roughly 45% of the area, or 27,161 acres, are capable of producing forage. We, too, have used this 45% figure. Of the 5,000 acres we moved from Mgt. Area B to Mgt. Area A, only 45% (2,250 acres) will involve forage-producing lands. Our assumptions concerning the acreage changes and the resultant change in productivity appear below.

	USFS #3 Acres	NPA Acres	USFS #3 Productivity (in AUM's)	NPA Productivity (in AUM's)
Mgt. Area A				
G	272	572	31.28	65.78
M	31	51	25.46	41.89
PC	278	278		
CC	307	307	192.88	221.84
TP	12,274	14,204		
	13,162	15,412	249.62	329.51
Mgt. Area C				
G	1,493	1,193	149.30	119.30
M	93	73	66.43	52.14
PC	1,076	1,076		
CC	920	920	153.67	124.74
TP	8,250	6,320		
	11,832	9,582	369.40	296.18
A and C TOTAL (West)	24,994	24,992	619.02	625.69
GRAND TOTAL FOR PLANNING UNIT	65,450	65,450	1,625.80	1,632.50

CALCULATION OF ELK OUTPUT

	Elk/Acre	X	Acres	=	Elk
Mgt. Areas B & C	.02		28,600		572
Other Mgt. Areas	.01		80.400		804
					1,376

CALCULATION OF WATER OUTPUT

(West Subunit)	Acre Ft./Acre	X	Acres	=	Acre Ft.
Mgt. Area A	4,856		41,145		204,656
Mgt. Area C	4,731		14,820		70,113
All other areas in Planning Unit (from Plan, p. B-48, B-49)					37,161
GRAND TOTAL					311,930

APPENDIX

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APPENDIX A

FUEL LOAD RATING OUTPUTS

FUEL LOADING

It is widely known that the accumulation of forest fuels culminates at some point in time. This limit is dependent on fire and/or management. For this reason, build-up of fuels in Management Areas E, F, and the proposed Research Natural Area will occur "naturally" aside from man caused or catastrophic fires.

Fuels in a managed situation will be kept to a lower level due to slash abatement and prescribed burning. Within Management Area D, at least a third of the fuel loading will be reduced through timber harvest practices. Since timber management activities will remove both large heavy fuels and some light fuels at intervals of approximately 20 years, this will tend to keep fuels at a tolerable level while maintaining visual quality.

Prior to management and protection, low intensity natural fires have been known to burn through areas of ponderosa pine periodically every 10 to 15 years, thereby decreasing fuels and keeping them at a low level. Because of the fuels management and protection program, the number of acres burned have been significantly reduced. Controlled burns serve to produce and influence this natural condition. Necessary controlled burns tend to protect, maintain or improve specific ecosystems, but in a manner that considers public safety, resource values, hazards, risks, and management objectives.

The following graphs illustrate the natural build-up of fuel in a near natural state protected from fire.

Due to lack of research references, the fuel loading of a managed stand of timber cannot be graphically illustrated. However, fuel managers have observed a significant reduction in fuel loadings following timber management acitivities involving slash disposal.

Timber managers can apply the following graphs to the T.R.I.[1/] ecoclass type maps available at the respective Forest Service Ranger Station.

Factors to consider:

Fuel Load Ratings

Low = 0-20 tons of fuel/acre
Average 10 tons/acre

Moderate = 20-50 tons/acre
Average 35 tons/acre

High = 50+ tons/acre
Average 75 tons/acre

1/ Total Resource Information System

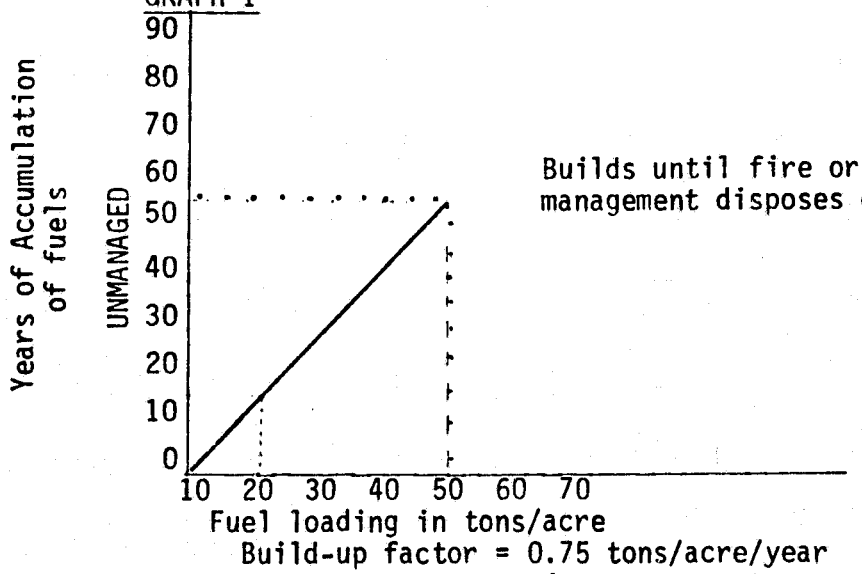
Fuel build-ups by species

Ponderosa pine accumulates
0.75 tons/acre/year

Mixed associated species
1.5 tons/acre/year

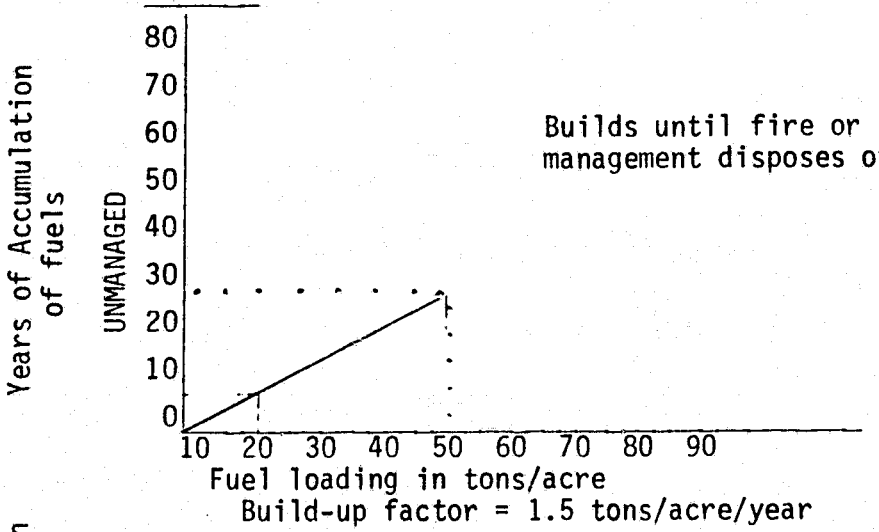
Douglas-fir
3.0 tons/acre/year

GRAPH 1



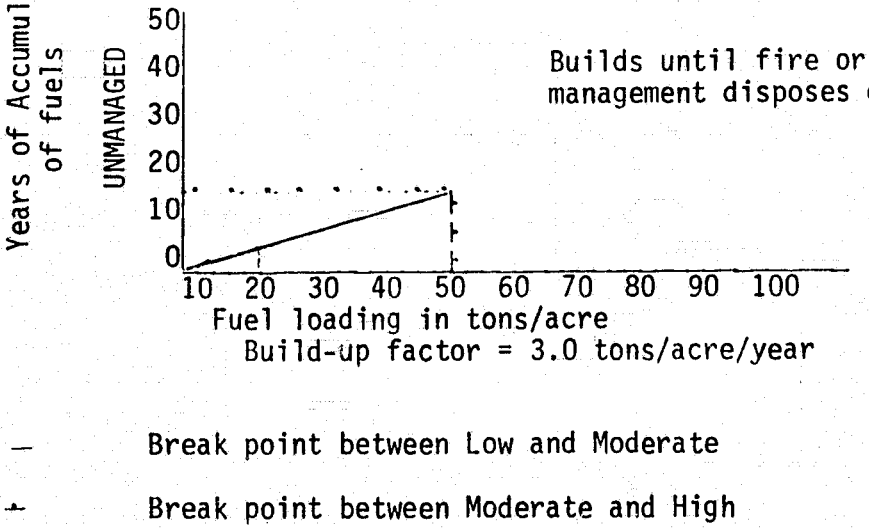
Build-up factor = 0.75 tons/acre/year

GRAPH 2



Build-up factor = 1.5 tons/acre/year

GRAPH 3



Build-up factor = 3.0 tons/acre/year

- - - - - Break point between Low and Moderate

+ + + + Break point between Moderate and High

TABLE 1 EAST EXISTING FUEL LOADS

ALTERNATIVE		1		2		3		4		5		7	
		Acres	100 Tons/Acre	Acres	100 Tons/Acre	Acres	100 Tons/Acre	Acres	100 Tons/Acre	Acres	100 Tons/Acre	Acres	100 Tons/Acre
MANAGEMENT TYPE WITH FUEL LOAD RATINGS													
Management Area A	H 1/	20,094	15,070.50	14,199	10,649.25	15,405	11,553.75	13,979	10,484.25	13,687	10,265.25	13,335	10,001.25
	M 2/	15,460	5,411.00	10,274	3,595.90	12,925	4,523.75	10,159	3,555.65	6,837	2,392.95	10,164	3,557.40
	L 3/	10,540	1,054.00	4,444	444.40	5,095	509.50	4,404	440.40	779	77.90	4,270	427.00
	TOTAL	46,094	21,535.50	28,917	14,689.55	33,425	16,587.00	28,542	14,480.3	21,303	12,736.10	27,769	13,985.68
Management Area B	H	10	7.50	10	7.50	10	7.50	10	7.50	10	7.50	6	4.50
	M	326	114.10	326	114.10	326	114.10	326	114.10	326	114.10	26	9.10
	L	170	17.00	170	17.00	170	17.00	170	17.00	170	17.00	170	17.00
	TOTAL	506	138.60	506	138.60	506	139.60	506	138.60	506	138.60	202	30.60
Management Area C	H			3,028	2,271.00	4,439	3,329.25	3,028	2,271.00	2,789	2,091.75	4,378	3,283.50
	M			1,020	357.00	2,358	825.30	968	338.8	891	311.85	1,475	516.25
	L			3,746	374.60	5,405	540.50	3,746	374.60	3,450	345.00	5,417	541.70
	TOTAL			7,794	3,002.60	12,202	4,695.05	7,742	2,984.40	7,130	2,748.60	11,270	4,341.45
Management Area D	H			2,867	2,150.25			2,837	2,127.75			2,867	2,150.25
	M			4,166	1,458.10			4,156	1,454.60			4,166	1,458.10
	L			2,350	235.00			2,350	235.00			2,350	235.00
	TOTAL			9,383	3,843.35			9,343	3,817.35			9,383	3,843.35
Management Area E	H					250	187.50	250	187.50	154	115.50		
	M					177	61.95	177	61.95				
	L					40	4.00	40	4.00	30	3.00		
	TOTAL					467	253.45	467	253.45	184	118.50		
Management Area F	H									3,464	2,598.00		
	M									7,732	2,706.20		
	L									6,281	628.10		
	TOTAL									17,477	5,932.30		

1/ High Average 75 Tons/Acre
2/ Moderate Average 35 Tons/Acre
3/ Low Average 10 Tons/Acre

REPRODUCIBILITY OF THE

TABLE 2 WEST EXISTING FUEL LOADS

ALTERNATIVE		1		2		3		4		5			
		Acres	100 Tons/Acre	Acres	100 Tons/Acre	Acres	100 Tons/Acre	Acres	100 Tons/Acre	Acres	100 Tons/Acre	Acres	100 Tons/Acre
MANAGEMENT TYPE WITH FUEL LOAD RATINGS													
Management Area A	H 1/	8,867	6,650.25	6,197	4,647.75	5,707	4,280.25	6,920	5,190.00	5,707	4,280.25	7,052	5,289.00
	M 2/	26,525	9,283.75	14,661	5,131.35	17,311	6,058.85	13,164	4,607.40	17,311	6,058.85	16,110	5,638.50
	L 3/	22,724	2,272.40	13,884	1,388.40	14,127	1,412.70	13,673	1,367.30	14,127	1,412.70	15,251	1,525.10
	TOTAL	58,116	18,206.40	34,742	11,167.50	37,145	11,751.80	33,757	11,164.70	37,145	11,751.80	38,413	12,452.60
Management Area B	H	883	662.25	883	662.25	883	662.25	883	662.25	883	662.25	275	206.25
	M	225	78.75	225	78.75	225	78.75	225	78.75	225	78.75	321	112.35
	L	8	.80	8	.80	8	.80	8	.80	8	.80	4	.40
	TOTAL	1,116	741.80	1,116	741.80	1,116	741.80	1,116	741.80	1,116	741.80	600	319.00
Management Area C	H			2,160	1,620.00	2,983	2,237.25	1,130	997.50	2,983	2,237.25	1,940	1,455.00
	M			5,350	1,872.50	8,891	3,111.85	7,857	2,749.95	8,891	3,111.85	4,805	1,681.75
	L			3,740	374.00	7,946	794.60	6,750	675.00	7,946	794.60	3,359	335.90
	TOTAL			11,250	3,866.50	19,820	6,143.70	15,937	4,422.45	19,820	6,143.70	10,104	3,472.60
Management Area D	H			510	382.50			440	330.00			476	357.00
	M			6,514	2,279.90			5,181	1,813.35			6,078	3,127.30
	L			5,100	510.00			1,650	165.00			4,758	475.80
	TOTAL			12,124	3,172.40			7,271	2,308.35			11,312	2,960.10
Management Area E	H					177	132.75	177	132.75	177	132.75		
	M					323	113.05	323	113.05	323	113.05		
	L					651	65.10	651	65.10	651	65.10		
	TOTAL					1,151	310.90	1,151	310.90	1,151	310.90		
Proposed Research Natural Area	H	178	133.50	178	133.50	178	133.50	178	133.50	178	133.50		
	M	586	205.10	586	205.10	586	205.10	586	205.10	586	205.10		
	L	433	43.30	433	43.30	433	43.30	433	43.30	433	43.30		
	TOTAL	1,197	381.90	1,197	381.90	1,197	381.90	1,197	381.90	1,197	381.90		

1/ High Average 75 Tons/Acre
2/ Moderate Average 35 Tons/Acre
3/ Low Average 10 Tons/Acre

APPENDIX A

RANGE PRODUCTION OUTPUTS

POTENTIAL FORAGE PRODUCTION

The figures used in this long-term planning effort deal with projected forage production considering different range and management types. They generally reflect changes in forage growth from manipulations in forested areas and potential increases from direct treatment of nonforested as well as forested areas, i.e., reseeding and livestock manipulations.

The actual use by livestock (stocking rate) can only be handled by specific implementation plans for individual grazing allotments. Such things as class of livestock, user philosophy, management systems, big game considerations, range conditions, seasonal fluctuations, and conflicts with other users affect actual use. Through careful evaluation of actual use, these factors can best be considered to arrive at a proper stocking rate.

For the Kittitas Planning Unit, expertise from local range managers was used to predict forage production levels for range and forest types. This information was then applied to the different management areas to arrive at the potential forage production levels for each alternative.

The resulting figures reflect relative index values only. They are not directly comparable to present livestock stocking rates and may not reflect corresponding changes in stocking rates which are often limited by factors other than forage amounts.

Range Assumptions

1. Forage yields (AUM) were computed using the following base data: 1100 pounds dry weight forage per animal unit month (adult cow with calf under six months old); 15% allowance for big game consumption was deducted less a 50% utilization factor.

   Example: [1/] 1100# dry wt./AUM ÷ 330# dry wt./acre = 3 acres/AUM; 3 acres/AUM ÷ 85% (big game allowance) ÷ 50% (proper use) = 7.1 acres/AUM.

   Using this formula, the following range outputs in acres/AUM were computed:

G (Grass)	-	10	Acres/AUM
M (Meadow)	-	1.4	Acres/AUM
PC (Transitory Partial Cut)	-	15	Acres/AUM
CC (Transitory Clearcut)	-	5	Acres/AUM

[1/] This example illustrates that it requires 7.1 acres to support one cow/calf unit for one month.

2. Transitory range potential is calculated using an average life of twenty years (from cutting date to time when tree canopy closes to 50% density.) Assuming a 130-year rotation with a production life of twenty years, 15% of the total usable forested acres will be in range production at any given time. This reflects the average forage production per year.

   Assumptions for calculations of transitory forage:

   a. Acres suitable transitory range.
   b. 25% acres in clearcut acres.
   c. 75% acres in partial cut acres.
   d. 40% or less slopes.
   e. Slash abated to permit livestock movement.
   f. The need for (1) water development per section (640 acres).
   g. Average life value of transitory range as 20 years.

KITTITAS UNIT

TRANSITORY POTENTIAL
AVERAGE PRODUCTION IN AUM/YEAR
(WEST SUBUNIT)

- Includes total acres of PC, CC, and TP for developing projected average AUM production/year.

- Acres calculated using Alternative #1 which maximizes wood-forage outputs.

Existing transitory partial cuts (PC)	=	1804 acres
Existing transitory clearcuts (CC)	=	1231 acres
Transitory potential (TP)	=	22224 acres
Total Acres of TP	=	25259 acres

6,314.75 acres (25% TP) ÷ 1/ 5 acres/AUM (CC)	=	1262.95 AUM's
18,944.25 acres (75% TP) ÷ 1/ 15 acres/AUM (PC)	=	1262.95 AUM's
		2525.90 AUM's

- 2020.72 AUM X 15% production/year = transitory grazing potential
  = 378.87 AUM/Yr. average production.

1/ Refer to computation of grazing outputs in acres/AUM on Page A-6.

TRANSITORY POTENTIAL
AVERAGE PRODUCTION IN AUM/YEAR
(EAST SUBUNIT)

- Includes total acres of existing transitory partial cut and clearcuts plus transitory potential for developing projected average production in AUM's per year.

- Acres calculated using total TP from Alternative #1 which maximizes wood-forage outputs for the plan.

Existing transitory partial cuts (PC)	=	3965 acres
Existing transitory clearcuts (CC)	=	639 acres
Transitory potential (TP)	=	29367 acres
Total acres of TP	=	33971 acres

8,492.75 acres (25% TP) ÷ [1/] 5 acres/AUM (CC) = 1698.55 AUM's
25,478.25 acres (75% TP) ÷ [1/] 15 acres/AUM (PC) = 1698.55 AUM's
3397.10 AUM's

3397.10 AUM X 15% production/year = 509.57 AUM/year average production.

[1/] Refer to computation of grazing outputs in acres/AUM on Page A-6.

EXAMPLES OF COMPUTATIONS OF RANGE POTENTIAL

Find: Animal Unit Months/Year for each land class and allocation.

Management Area A (East) - Alternative 1

Given: 15% increase in grass and meadows.

Grass	=	4034 Acres
Meadows	=	83 Acres
Existing transitory partial cut (PC)	=	3963 Acres
Existing transitory clearcut (CC)	=	639 Acres
Transitory potential (TP)	=	29064 Acres
°° TP, PC, CC	=	33666 Acres

Solution:

Grass

4034 acres ÷ 10 acres/AUM	=	403.4 AUM
403.4 AUM x 15% + (403.4 AUM)	=	463.91 AUM/Year

Meadows

83 acres ÷ 1.4 acres/AUM	=	59.29 AUM
59.29 AUM x 15% + (59.29 AUM)	=	68.18 AUM/Year

PC, CC, TP

33,666 acres ÷ 33,971 total TP acres	=	0.9910
0.9910 X 509.57 Average AUM/Year	=	504.98 AUM/Year

Management Area B (East) - Alternatives 1 - 5

Given: 35% reduction of all range classes.

Grass	=	201 Acres
Existing transitory partial cut (PC)	=	2 Acres
Transitory potential (TP)	=	303 Acres

Solution:

Grass

201 acres ÷ 10* acres/AUM	=	20.1 AUM
20.1 AUM - 35% (20.1 AUM) = 20.1 AUM - 7.1	=	13.0 AUM/Year

Transitory Potential (PC + TP)

305 Acres ÷ 33971** Total transitory potential for East	=	0.0090
0.0090 X 509.57** AUM/year average production	=	4.59 AUM
4.59 AUM - 35% (4.59 AUM)	=	2.98 AUM/Year

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* Given in Range Assumptions Part 1.
** Given in Range Assumptions Part 2.

APPENDIX A

DISPERSED RECREATION OUTPUTS

RECREATION ACTIVITY OUTPUT CALCULATIONS

Recreation use reported for C.Y. 1976 in R.I.M. statistics was used as the primary basis for calculating percentage of use by recreation activity. An examination of recreation uses on the Ellensburg Ranger District reflect realistic percentages of recreation activities for the entire planning unit. Therefore, the Ellensburg Ranger District use percentages were applied to the Cle Elum Ranger District portion of the planning unit because of the close similarity.

R.I.M. statistics showing recreational activities and percentage use for the Ellensburg Ranger District are shown for C.Y. 1976 and adjusted to present in Table 4. The adjusted percentage for each activity was then used to determine the Existing Visitor Day per year outputs shown in Table 4.

Predicted changes in visitor day use by alternative was developed by estimating the percentage increase or decrease in recreation activity opportunity for each management type proposed. Table 5 shows the percentage change using the local Forest Manager's best judgement.

Table 5 was then used to develop converting factors in VD/AC for each allocation type as shown on Tables 6-11.

TABLE 4

EXISTING VISITOR DAY OUTPUTS
USING ADJUSTED RECREATION
USE PERCENTAGES

DISPERSED RECREATION ACTIVITIES	C.Y. 76 USE % 1/	Adjusted Use % (Present) 2/	EXISTING VISITOR-DAYS EAST	WEST	TOTAL
SNOWMOBILING	4.1	4.1	4,920	3,895	8,815
X COUNTRY SKIING	0.2	0.3	360	285	645
MOTOR BIKES	7.0	7.0	8,400	6,650	15,050
4-WHEEL DRIVE	-	5.0	6,000	4,750	10,750
HIKING	3.2	3.2	3,840	3,040	6,880
EQUESTRIAN	0.7	0.7	840	665	1,505
HUNTING	12.9	12.9	15,480	12,255	27,735
ROCK HOUNDING	-	1.0	1,200	950	2,150
FISHING	1.7	1.7	2,040	1,615	3,655
GATHERING FOREST PRODUCTS	2.4	7.2	8,640	6,840	15,480
PRIMITIVE CAMP & PICNIC	30.3	30.3	36,360	28,785	65,145
DRIVE FOR PLEASURE	31.6	26.6	31,920	25,270	57,190
MISC.	5.9	-	-	-	-
TOTALS	100.0	100.0	120,000	95,000	215,000

1/ Recreation Use % computed from C.Y. 76 R.I.M. Statistics for Ellensburg Ranger District.

2/ C.Y. 76 Use % adjusted to present using Recreation Staff Officer's best judgment.

TABLE 5
DISPERSED RECREATION MATRIX
SHOWING % CHANGE IN VD/YEAR BY
MANAGEMENT TYPE

MANAGEMENT ACTIVITY	EXISTING VD/Year		C.F. VD/Acre		MANAGEMENT AREA A		MANAGEMENT AREA B		MANAGEMENT AREA C		MANAGEMENT AREA D		MANAGEMENT AREA E		MANAGEMENT AREA F		PROPOSED RESEARCH NATURAL AREA	
					%	%	%	%	%	%	%	%	%	%	%	%	%	%
	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West
RECREATION ACTIVITY																		
Snowmobiling	4,920	3,895	0.1012	0.0645	+5	+25	-50	-50	N/C	+10	+10	N/C	N/C	N/C	-50	-	-	-100
X Country Skiing	360	285	0.0074	0.0047	+5	+15	+10	+10	N/C	+ 5	+10	+20	N/C	N/C	+15	-	-	N/C
Motor Bike	8,400	6,650	0.1728	0.1101	+10	+10	-10	-10	-10	-10	N/C	N/C	N/C	N/C	N/C	-	-	-100
4-Wheel Drive	6,000	4,750	0.1234	0.0786	+10	+20	-10	-10	-10	-10	-10	-10	N/C	N/C	N/C	-	-	-100
Hiking	3,840	3,040	0.0790	0.0503	-25	-25	N/C	N/C	+10	+10	+20	+20	N/C	N/C	+30	-	-	N/C
Equestrian	840	665	0.0173	0.0110	N/C	N/C	N/C	N/C	+10	+10	+15	+15	N/C	N/C	+5	-	-	N/C
Hunting	15,480	12,255	0.3185	0.2029	+30	+30	+10	-20	+10	+10	N/C	N/C	N/C	N/C	-10	-	-	-20
Rock Hound	1,200	950	0.0247	0.0157	N/C	N/C	N/C	N/C	N/C	N/C	+10	+10	N/C	N/C	N/C	-	-	N/C
Fishing	2,040	1,615	0.0420	0.0267	N/C	N/C	N/C	N/C	N/C	N/C	N/C	+10	N/C	N/C	N/C	-	-	+5
GENERAL																		
A. Gathering Forest Products	8,640	6,840	0.1778	0.1132	+40	+40	N/C	N/C	+10	+10	-10	-10	N/C	N/C	-50	-	-	-10
B. Primitive Camping & Picnicking	36,360	28,785	0.7481	0.4765	+15	+15	N/C	N/C	-10	-10	+25	+25	N/C	N/C	-20	-	-	-50
C Driving for Pleasure	31,920	25,270	0.6568	0.4184	+15	+15	N/C	N/C	N/C	N/C	+5	+5	N/C	N/C	-100	-	-	-100
TOTALS	120,000	95,000																

1/ N/C Represents No Change from Existing

TABLE 6
DISPERSED RECREATION OUTPUTS
IN VISITOR DAYS PER YEAR BY
MANAGEMENT TYPE

RECREATION ACTIVITY	SNOWMOBILES			CROSS COUNTRY SKIING			MOTOR BIKES			4-WHEEL DRIVE		
	Acres	C.F. VD/AC	V.D.	Acres	C.F. VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
Management Activity												
					Alternative #1 (East)							
Management Area A	48,118	0.1063	5,115	48,118	0.0078	375	48,118	0.1901	9,147	48,118	0.1357	6,530
Management Area B	506	0.0506	26	506	0.0081	4	506	0.1535	79	506		-
TOTALS	48,624		5,141			379			9,226			6,530
					Alternative #1 (West)							
Management Area A	58,116	0.0806	4,684	58,116	0.0054	314	58,116	0.1211	7,038	58,116	0.0943	5,480
Management Area B	1,116	0.0323	36	1,116	0.0052	6	1,116	0.0991	111	1,116		
Proposed Research Natural Area	1,197		-	1,197	0.0047	6	1,197		-	1,		
TOTALS	60,429		4,720			326			7,149			5,480
					Alternative #1 (Combined)							
Management Area A	106,234		9,799			689			16,185			12,010
Management Area B	1,622		62			10			190			135
Proposed Research Natural Area	1,197		-			6			-			-
TOTALS	109,053		9,861			705			16,375			12,145

RECREATION ACTIVITY	HIKING			EQUESTRIAN			HUNTING			ROCK HOUNDING		
	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
Management Activity												
					Alternative #1 (East)							
Management Area A	48,118	0.0593	2,855	48,118	0.0173	832	48,118	0.4141	19,926	48,118	0.0247	1,189
Management Area B	506	0.0796	40	506	0.0173	9	506	0.3504	177	506	0.0247	12
TOTALS			2,893			841			20,103			1,201
					Alternative #1 (West)							
Management Area A	58,116	0.0377	2,191	58,116	0.0110	639	58,116	0.2638	15,331	58,116	0.0157	912
Management Area B	1,116	0.0503	56	1,116	0.0110	12	1,116	0.1623	181	1,116	0.0157	18
Proposed Research Natural Area	1,197	0.0503	60	1,197	0.0110	13	1,197	0.1623	194	1,197	0.0157	19
TOTALS			2,307			664			15,706			949
					Alternative #1 (Combined)							
Management Area A			5,044			1,471			35,257			2,101
Management Area B			96			21			356			30
Proposed Research Natural Area			60			13			194			19
TOTALS			5,200			1,505			35,809			2,150

RECREATION ACTIVITY	FISHING			GATHERING FOR PROD.			HUM. CAMP & PICNIC			DRIVE FOR PLEASURE		
	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
Management Activity												
					Alternative #1 (East)							
Management Area A	48,118	0.0420	2,021	48,118	0.2409	11,977	48,118	0.8603	41,396	48,118	0.7553	36,344
Management Area B	506	0.0420	21	506	0.1778	90	506	0.7481	379	506	0.6568	332
TOTALS			2,042			12,067			41,775			36,676
					Alternative #1 (West)							
Management Area A	58,116	0.0267	1,552	58,116	0.1595	9,211	58,116	0.5480	31,848	58,116	0.4812	27,965
Management Area B	1,116	0.0267	30	1,116	0.1132	126	1,116	0.4765	532	1,116	0.4184	467
Proposed Research Natural Area	1,197	0.0280	34	1,197	0.1019	122	1,197	0.2383	285	1,197	-	-
TOTALS			1,616			9,459			32,665			28,432
					Alternative #1 (Combined)							
Management Area A			3,573			21,188			73,244			64,309
Management Area B			51			216			911			799
Proposed Research Natural Area			34			122			285			-
TOTALS			3,658			21,526			74,440			65,108

	TOTALS		EXISTING
	Acres	V.D.	V.D.
Management Activity			
		Alternative #1 (East)	
Management Area A	48,118	137,705	
Management Area B	506	1,225	
TOTALS	48,624	138,930	120,000
		Alternative #1 (West)	
Management Area A	58,116	107,165	
Management Area B	1,116	1,654	
Proposed Research Natural Area	1,197	733	
TOTALS	60,429	109,552	95,000
		Alternative #1 (Combined)	
Management Area A		244,870	
Management Area B		2,879	
Proposed Research Natural Area		733	
TOTALS	109,053	248,482	215,000

TABLE 7
DISPERSED RECREATION OUTPUTS
IN VISITOR DAYS PER YEAR BY
MANAGEMENT TYPE

RECREATION ACTIVITY	SNOWMOBILES			CROSS COUNTRY SKIING			MOTOR BIKES			4-WHEEL DRIVE		
	Acres	C.F. VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
Management Activity												
					Alternative #2 (East)							
Management Area A	30,941	0.1063	3,289	30,941	0.0078	241	30,941	0.1901	5,882	30,941	0.1357	4,199
Management Area B	506	0.0506	26	506	0.0081	4	506	0.1355	79	506	0.1111	56
Management Area C	7,794	0.1012	789	7,794	0.0074	58	7,794	0.1566	1,213	7,794	0.1111	866
Management Area D	9,383	0.1113	1,044	9,303	0.0081	76	9,383	0.1728	1,621	9,383	0.1111	1,042
TOTALS	48,624		5,148			379			8,795			6,163
					Alternative #2 (West)							
Management Area A	34,742	0.0806	2,800	34,742	0.0054	188	34,742	0.1211	4,207	34,742	0.0943	3,276
Management Area B	1,116	0.0323	36	1,116	0.0052	6	1,116	0.0991	111	1,116	0.0707	79
Management Area C	11,250	0.0710	799	11,250	0.0049	55	11,250	0.0991	1,115	11,250	0.0707	795
Management Area D	12,124	0.0645	782	12,124	0.0056	68	12,124	0.1101	1,335	12,124	0.0707	856
Proposed Research Natural Area	1,197	-	-	1,197	0.0047	6	1,197	-	-	1,197	-	-
TOTALS	60,429		4,417			323			6,768			5,007
					Alternative #2 (Combined)							
Management Area A	65,683		6,089			429			10,089			7,475
Management Area B	1,622		62			10			190			135
Management Area C	19,044		1,508			113			2,328			1,661
Management Area D	21,507		1,826			144			2,956			1,899
Proposed Research Natural Area	1,197		-			6			-			-
GRAND TOTALS	109,053		9,365			702			15,563			11,170

RECREATION ACTIVITY	HIKING			EQUESTRIAN			HUNTING			ROCK HOUNDING		
	Acres	VU/AC	V.D.	Acres	C.F. VD/AC	V.D.	Acres	C.F. VD/AC	V.D.	Acres	C.F. VD/AC	V.D.
Management Activity												
					Alternative #2 (East)							
Management Area A	30,941	0.0593	1,835	30,941	0.0173	535	30,941	0.4141	12,813	30,941	0.0247	764
Management Area B	506	0.0790	40	506	0.0173	9	506	0.3504	177	506	0.0247	12
Management Area C	7,794	0.0869	677	7,794	0.0190	148	7,794	0.3504	2,731	7,794	0.0247	193
Management Area D	9,383	0.0948	890	9,383	0.0199	187	9,383	0.3185	2,988	9,303	0.0272	255
TOTALS			3,442			879			18,709			1,224
					Alternative #2 (West)							
Management Area A	34,742	0.0377	1,310	34,742	0.0110	382	34,742	0.2638	9,165	34,742	0.0157	545
Management Area B	1,116	0.0503	56	1,116	0.0110	12	1,116	0.1623	181	1,116	0.0157	18
Management Area C	11,250	0.0553	622	11,250	0.0121	136	11,250	0.2232	2,511	11,250	0.0157	177
Management Area D	12,124	0.0604	732	12,124	0.0127	154	12,124	0.2029	2,460	12,124	0.0173	210
Proposed Research Natural Area	1,197	0.0503	60	1,197	0.0110	13	1,197	0.1623	194	1,197	0.0157	19
TOTALS			2,780			697			14,511			969
					Alternative #2 (Combined)							
Management Area A			3,145			917			21,978			1,309
Management Area B			96			21			258			31
Management Area C			1,299			284			5,242			370
Management Area D			1,622			341			5,448			465
Proposed Research Natural Area			60			13			194			19
GRAND TOTALS			6,222			1,676			33,220			2,194

RECREATION ACTIVITY	FISHING			GATHERING FOR FOOD			PRIM. CAMP & PICNIC			DRIVE FOR PLEASURE		
	Acres	C.F. VD/AC	V.D.	Acres	C.F. VD/AC	V.D.	Acres	C.F. VD/AC	V.D.	Acres	C.F. VD/AC	V.D.
Management Activity												
					Alternative #2 (East)							
Management Area A	30,941	0.0420	1,300	30,941	0.2489	7,701	30,941	0.8603	26,619	30,941	0.7553	23,370
Management Area B	506	0.0420	21	506	0.1778	90	506	0.7481	379	506	0.6568	332
Management Area C	7,794	0.0420	327	7,794	0.1956	1,525	7,794	0.6733	5,248	7,794	0.6568	5,119
Management Area D	9,383	0.0420	394	9,383	0.1600	1,501	9,363	0.9351	8,774	9,383	0.6896	6,471
TOTALS			2,042			10,817			41,020			35,292
					Alternative #2 (West)							
Management Area A	34,742	0.0267	928	34,742	0.1585	5,507	34,742	0.5480	19,039	34,742	0.4812	16,718
Management Area B	1,116	0.0267	30	1,116	0.1132	126	1,116	0.4765	532	1,116	0.4184	467
Management Area C	11,250	0.0267	30	11,250	0.1245	1,401	11,250	0.4289	4,825	11,250	0.4184	4,707
Management Area D	12,124	0.0294	356	12,124	0.1019	1,235	12,124	0.5956	7,221	12,124	0.4393	5,326
Proposed Research Natural Area	1,197	0.0280	34	1,197	0.1019	122	1,197	0.2383	285	1,197		-
TOTALS			1,648			8,391			31,902			27,218
					Alternative #2 (Combined)							
Management Area A			2,228			13,208			45,658			
Management Area B			51			216			911			40,088
Management Area C			627			2,926			10,073			789
Management Area D			750			2,736			15,995			9,826
Proposed Research Natural Area			34			122			285			11,797
GRAND TOTALS			3,690			19,207			72,922			62,510

	TOTALS		EXISTING	
	Acres	V.D.	Acres	V.D.
Management Activity				
		Alternative #2 (East)		
Management Area A	30,491	88,548		
Management Area B	506	1,225		
Management Area C	7,794	18,894		
Management Area D	9,383	25,243		
TOTALS	48,624	133,910	48,624	120,000
		Alternative #2 (West)		
Management Area A	34,742	64,065		
Management Area B	1,116	1,654		
Management Area C	11,250	17,443		
Management Area D	12,124	20,736		
Proposed Research Natural Area	1,197	733		
TOTALS	60,429	104,631	60,429	95,000
		Alternative #2 (Combined)		
Management Area A				
Management Area B		152,613		
Management Area C		2,879		
Management Area D		36,337		
Proposed Research Natural Area		45,979		
GRAND TOTALS		238,541	109,053	215,000

TABLE 8
DISPERSED RECREATION OUTPUTS
IN VISITOR DAYS PER YEAR BY
MANAGEMENT TYPE

RECREATION ACTIVITY	SNOWMOBILES			CROSS COUNTRY SKIING			MOTOR BIKES			4-WHEEL DRIVE		
	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
Management Activity												
					Alternative #3 (East)							
Management Area A	35,449	0.1063	3,768	35,449	0.0078	277	35,449	0.1901	6,739	35,449	0.1357	4,810
Management Area B	506	0.0506	26	506	0.0081	4	506	0.1555	79	506	0.1111	56
Management Area C	12,202	0.1012	1,235	12,202	0.0074	90	12,202	0.1556	1,899	12,202	0.1111	1,356
Management Area E	467	0.1012	47	467	0.0074	3	467	0.1728	81	467	0.1234	58
TOTALS	48,624		5,076			374			8,798			6,280
					Alternative #3 (West)							
Management Area A	37,145	0.0806	2,994	37,145	0.0054	201	37,145	0.1211	4,498	37,145	0.0943	3,503
Management Area B	1,116	0.0323	36	1,116	0.0052	6	1,116	0.0991	111	1,116	0.0707	79
Management Area C	19,820	0.0710	1,407	19,820	0.0049	97	19,820	0.0991	1,964	19,820	0.0707	1,401
Management Area E	1,151	0.0645	74	1,151	0.0047	5	1,151	0.1101	127	1,151	0.0786	90
Proposed Research Natural Area	1,197	-	-	1,197	0.0047	6	1,197	-	-	1,197	-	-
TOTALS	60,429		4,511			315			6,700			5,073
					Alternative #3 (Combined)							
Management Area A	72,594		6,762			478			11,237			8,313
Management Area B	1,622		62			10			190			135
Management Area C	32,022		2,642			187			3,863			2,757
Management Area E	1,618		121			8			208			148
Proposed Research Natural Area	1,197		-			6			-			-
GRAND TOTALS	109,053		9,587			689			15,498			11,353

RECREATION ACTIVITY	HIKING			EQUESTRIAN			HUNTING			ROCK HOUNDING		
	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
Management Activity												
					Alternative #3 (East)							
Management Area A	35,449	0.0593	2,102	35,449	0.0173	613	35,449	0.4141	14,679	35,449	0.0247	876
Management Area B	506	0.0790	40	506	0.0173	9	506	0.3504	177	506	0.0247	12
Management Area C	12,202	0.0869	1,060	12,202	0.0190	232	12,202	0.3504	4,276	12,202	0.0247	301
Management Area E	467	0.0790	37	467	0.0173	8	467	0.3185	149	467	0.0247	12
TOTALS			3,239			862			19,281			1,201
					Alternative #3 (West)							
Management Area A	37,145	0.0377	1,400	37,145	0.0110	409	37,145	0.2638	9,799	37,145	0.0157	583
Management Area B	1,116	0.0503	56	1,116	0.0110	12	1,116	0.1623	181	1,116	0.0157	18
Management Area C	19,820	0.0553	1,096	19,820	0.0121	240	19,820	0.2232	4,424	19,820	0.0157	311
Management Area E	1,151	0.0503	58	1,151	0.0110	13	1,151	0.2029	234	1,151	0.0157	18
Proposed Research Natural Area	1,197	0.0503	60	1,197	0.0110	13	1,197	0.1623	194	1,197	0.0157	19
TOTALS			2,670			687			14,832			949
					Alternative #3 (Combined)							
Management Area A			3,502			1,022			24,478			1,459
Management Area B			96			21			358			30
Management Area C			2,156			472			8,700			612
Management Area E			95			21			383			30
Proposed Research Natural Area			60			13			194			19
GRAND TOTALS			5,909			1,549			34,113			2,150

RECREATION ACTIVITY	FISHING			GATHERING FOR PROD.			PRIM. CAMP & PICNIC			DRIVE FOR PLEASURE		
	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
Management Activity												
					Alternative #3 (East)							
Management Area A	35,449	0.0420	1,489	35,449	0.2489	8,823	35,449	0.8603	30,497	35,449	0.7553	26,775
Management Area B	506	0.0420	21	506	0.1778	90	506	0.7481	379	506	0.6568	332
Management Area C	12,202	0.0420	512	12,202	0.1956	2,387	12,202	0.6733	8,216	12,202	0.6568	8,014
Management Area E	467	0.0420	20	467	0.1778	83	467	0.7481	349	467	0.6568	307
TOTALS			2,042			11,383			39,441			35,428
					Alternative #3 (West)							
Management Area A	37,145	0.0267	992	37,145	0.1585	5,887	37,145	0.5480	20,355	37,145	0.4812	17,874
Management Area B	1,116	0.0267	30	1,116	0.1129	126	1,116	0.4765	532	1,116	0.4184	467
Management Area C	19,820	0.0267	529	19,820	0.1245	2,468	19,820	0.4289	8,501	19,820	0.4184	8,293
Management Area E	1,151	0.0267	31	1,151	0.1129	130	1,151	0.4765	548	1,151	0.4184	482
Proposed Research Natural Area	1,197	0.0280	34	1,197	0.1019	122	1,197	0.2383	285	1,197	-	-
TOTALS			1,616			8,733			30,221			27,116
					Alternative #3 (Combined)							
Management Area A			2,481			14,710			50,952			44,649
Management Area B			51			216			911			799
Management Area C			1,041			4,855			16,717			16,307
Management Area E			51			213			897			789
Proposed Research Natural Area			34			122			285			-
GRAND TOTALS			3,658			20,116			69,662			62,544

	TOTALS		EXISTING	
	Acres	V.D.	Acres	V.D.
Management Activity				
		Alternative #3 (East)		
Management Area A	35,449	101,448		
Management Area B	506	1,225		
Management Area C	12,202	29,578		
Management Area E	467	1,154		
TOTALS	48,624	133,405		120,000
		Alternative #3 (West)		
Management Area A	37,145	68,496		
Management Area B	1,116	1,654		
Management Area C	19,820	30,731		
Management Area E	1,151	1,810		
Proposed Research Natural Area	1,197	733		
TOTALS	60,429	103,423		95,000
		Alternative #3 (Combined)		
Management Area A		169,943		
Management Area B		2,879		
Management Area C		60,309		
Management Area E		2,964		
Proposed Research Natural Area		733		
GRAND TOTALS	109,053	236,828		215,000

TABLE 9
DISPERSED RECREATION OUTPUTS
IN VISITOR DAYS PER YEAR BY
MANAGEMENT TYPE

RECREATION ACTIVITY	SNOWMOBILES			CROSS COUNTRY SKIING			MOTOR BIKES			4-WHEEL DRIVE		
Management Activity	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
				Alternative #4 (East)								
Management Area A	30,566	0.1063	3,249	30,566	0.0078	238	30,566	0.1901	5,811	30,566	0.1357	4,148
Management Area B	506	0.0506	26	506	0.0081	4	506	0.1555	79	506	0.1111	56
Management Area C	7,742	0.1012	783	7,742	0.0074	57	7,742	0.1556	1,205	7,742	0.1111	860
Management Area D	9,343	0.1113	1,040	9,343	0.0081	76	9,343	0.1728	1,614	9,343	0.1111	1,038
Management Area E	467	0.1012	47	467	0.0074	3	467	0.1728	81	467	0.1234	58
TOTALS	48,624		5,145			378			8,790			6,160
				Alternative #4 (West)								
Management Area A	33,757	0.0806	2,721	33,757	0.0054	182	33,757	0.1211	4,088	33,757	0.0943	3,183
Management Area B	1,116	0.0323	36	1,116	0.0052	6	1,116	0.0991	111	1,116	0.0707	79
Management Area C	15,937	0.0710	1,132	15,937	0.0049	78	15,937	0.0991	1,579	15,937	0.0707	1,127
Management Area D	7,271	0.0645	469	7,271	0.0056	41	7,271	0.1101	801	7,271	0.0707	514
Management Area E	1,151	0.0645	74	1,151	0.0047	5	1,151	0.1101	127	1,151	0.0786	90
Proposed Research Natural Area	1,197	-	-	1,197	0.0047	6	1,197	-	-	1,197	-	-
TOTALS	60,429		4,432			318			6,706			4,993
				Alternative #4 (Combined)								
Management Area A	64,323		5,970			420			9,899			7,331
Management Area B	1,622		62			10			190			135
Management Area C	23,679		1,915			135			2,784			1,987
Management Area D	16,614		1,509			117			2,415			1,552
Management Area E	1,618		121			8			208			148
Proposed Research Natural Area	1,197		-			6			-			-
GRAND TOTALS	109,053		9,577			696			15,496			11,153

RECREATION ACTIVITY	HIKING			EQUESTRIAN			HUNTING			ROCK HOUNDING		
Management Activity	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
				Alternative #4 (East)								
Management Area A	30,566	0.0593	1,813	30,566	0.0173	529	30,566	0.4141	12,657	30,566	0.0247	755
Management Area B	506	0.0790	40	506	0.0173	9	506	0.3504	177	506	0.0247	12
Management Area C	7,742	0.0869	673	7,742	0.0190	147	7,742	0.3504	2,713	7,742	0.0247	191
Management Area D	9,343	0.0948	886	9,343	0.0199	186	9,343	0.3185	2,976	9,343	0.0272	254
Management Area E	467	0.0790	37	467	0.0173	8	467	0.3185	149	467	0.0247	12
TOTALS			3,449			879			18,672			1,224
				Alternative #4 (West)								
Management Area A	33,757	0.0377	1,273	33,757	0.0110	371	33,757	0.2638	8,905	33,757	0.0157	530
Management Area B	1,116	0.0503	56	1,116	0.0110	12	1,116	0.1623	181	1,116	0.0157	18
Management Area C	15,937	0.0553	881	15,937	0.0121	193	15,937	0.2232	3,557	15,937	0.0157	250
Management Area D	7,271	0.0604	439	7,271	0.0127	92	7,271	0.2029	1,475	7,271	0.0173	126
Management Area E	1,151	0.0503	58	1,151	0.0110	13	1,151	0.2029	234	1,151	0.0157	18
Proposed Research Natural Area	1,197	0.0503	60	1,197	0.0110	13	1,197	0.1623	194	1,197	0.0157	18
TOTALS			2,767			694			14,546			961
				Alternative #4 (Combined)								
Management Area A			3,086			900			21,562			1,285
Management Area B			96			21			358			31
Management Area C			1,554			340			6,270			441
Management Area D			1,325			278			4,451			380
Management Area E			95			21			383			30
Proposed Research Natural Area			60			13			194			18
GRAND TOTALS			6,216			1,573			33,218			2,185

RECREATION ACTIVITY	FISHING			GATHERING FOR PROD.			PRIM. CAMP & PICNIC			DRIVE FOR PLEASURE		
Management Activity	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
				Alternative #4 (East)								
Management Area A	30,566	0.0420	1,284	30,566	0.2489	7,608	30,566	0.8603	26,296	30,566	0.7553	23,086
Management Area B	506	0.0420	21	506	0.1778	90	506	0.7481	379	506	0.6568	332
Management Area C	7,742	0.0420	325	7,742	0.1956	1,514	7,742	0.6733	5,213	7,742	0.6568	5,085
Management Area D	9,343	0.0420	392	9,343	0.1600	1,495	9,343	0.9351	8,737	9,343	0.6896	6,443
Management Area E	467	0.0420	20	467	0.1778	83	467	0.7481	349	467	0.6568	307
TOTALS			2,042			10,790			40,974			35,253
				Alternative #4 (West)								
Management Area A	33,757	0.0267	901	33,757	0.1585	5,350	33,757	0.5480	18,499	33,757	0.4812	16,244
Management Area B	1,116	0.0267	30	1,116	0.1132	126	1,116	0.4765	532	1,116	0.4184	467
Management Area C	15,937	0.0267	426	15,937	0.1245	1,984	15,937	0.4289	6,835	15,937	0.4184	6,668
Management Area D	7,271	0.0294	214	7,271	0.1019	741	7,271	0.5956	4,331	7,271	0.4393	3,194
Management Area E	1,151	0.0267	31	1,151	0.1132	130	1,151	0.4765	548	1,151	0.4184	482
Proposed Research Natural Area	1,197	0.0280	34	1,197	0.1019	122	1,197	0.2383	285	1,197	-	-
TOTALS			1,636			8,453			31,030			27,055
				Alternative #4 (Combined)								
Management Area A			2,185			12,958			44,795			39,330
Management Area B			51			216			911			799
Management Area C			751			3,498			12,048			11,753
Management Area D			606			2,236			13,068			9,637
Management Area E			51			213			897			789
Proposed Research Natural Area			34			122			285			-
GRAND TOTALS			3,678			19,243			72,004			62,308

	TOTALS		EXISTING	
Management Activity	Acres	V.D.	Acres	V.D.
		Alternative #4 (East)		
Management Area A	30,566	87,474		
Management Area B	506	1,225		
Management Area C	7,742	18,766		
Management Area D	9,343	25,137		
Management Area E	467	1,154		
TOTALS	48,624	133,756		120,000
		Alternative #4 (West)		
Management Area A	33,757	62,247		
Management Area B	1,116	1,654		
Management Area C	15,937	24,710		
Management Area D	7,271	12,437		
Management Area E	1,151	1,810		
Proposed Research Natural Area	1,197	732		
TOTALS	60,429	103,590		95,000
		Alternative #4 (Combined)		
Management Area A		149,721		
Management Area B		2,554		
Management Area C		43,476		
Management Area D		37,574		
Management Area E		2,964		
Proposed Research Natural Area		733		
GRAND TOTALS	109,053	237,947		215,000

TABLE 10
DISPERSED RECREATION OUTPUTS
IN VISITOR DAYS PER YEAR BY
MANAGEMENT TYPE

RECREATION ACTIVITY	SNOWMOBILES			CROSS COUNTRY SKIING			MOTOR BIKES			4-WHEEL DRIVE		
Management Activity	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
				Alternative #5 (East)								
Management Area A	23,327	0.1063	2,480	23,327	0.0078	182	23,327	0.1901	4,434	23,327	0.1357	3,165
Management Area B	506	0.0506	26	506	0.0081	4	506	0.1555	79	506	-	56
Management Area C	7,130	0.1012	722	7,130	0.0074	53	7,130	0.1556	1,109	7,130	0.1111	792
Management Area E	184	0.1012	19	184	0.0074	1	184	0.1728	32	184	0.1234	23
Management Area F	17,477	0.0506	884	17,477	0.0086	150	17,477	0.1728	3,020	17,477	0.1234	2,157
TOTALS	48,624		4,131			390			8,674			6,193
				Alternative #5 (West)								
Management Area A	37,145	1/	2,994		1/	201		1/	4,498		1/	3,503
Management Area B	1,116		36			6			111			79
Management Area C	19,820		1,407			97			1,964			1,401
Management Area E	1,151		74			5			127			90
Proposed Research Natural Area	1,197		-			6			-			-
TOTALS	60,429		4,511			315			6,700			5,073
				Alternative #5 (Combined)								
Management Area A			5,474			383			8,932			6,668
Management Area B			62			10			190			135
Management Area C			2,129			150			3,073			2,193
Management Area E			93			6			159			113
Management Area F			884			150			3,020			2,157
Proposed Research Natural Area			-			6			-			-
GRAND TOTALS	109,053		8,642			705			15,374			11,266

RECREATION ACTIVITY	HIKING			EQUESTRIAN			HUNTING			ROCK HOUNDING		
Management Activity	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
				Alternative #5 (East)								
Management Area A	23,327	0.0593	1,383	23,327	0.0173	404	23,327	0.4141	9,660	23,327	0.0247	576
Management Area B	506	0.0790	40	506	0.0173	9	506	0.3504	177	506	0.0247	12
Management Area C	7,130	0.0869	620	7,130	0.0190	135	7,130	0.3504	2,498	7,130	0.0247	176
Management Area E	184	0.0790	15	184	0.0173	3	184	0.3185	59	184	0.0247	5
Management Area F	17,477	0.1027	1,795	17,477	0.0182	318	17,477	0.2867	5,011	17,477	0.0247	432
TOTALS			3,853			869			17,405			1,201
				Alternative #5 (West)								
Management Area A		1/	1,400		1/	409		1/	9,799		1/	583
Management Area B			56			12			181			18
Management Area C			1,096			240			4,424			311
Management Area E			58			13			234			18
Proposed Research Natural Area			60			13			194			19
TOTALS			2,670			687			14,832			949
				Alternative #5 (Combined)								
Management Area A			2,783			813			19,459			1,159
Management Area B			96			21			358			30
Management Area C			1,716			375			6,922			487
Management Area E			73			16			293			23
Management Area F			1,795			318			5,011			432
Proposed Research Natural Area			60			13			194			19
GRAND TOTALS			6,523			1,556			32,237			2,150

RECREATION ACTIVITY	FISHING			GATHERING FOR PROD.			PRIM. CAMP & PICNIC			DRIVE FOR PLEASURE		
Management Activity	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
				Alternative #5 (East)								
Management Area A	23,327	0.0420	980	23,327	0.2489	5,806	23,327	0.8603	20,068	23,327	0.7553	17,619
Management Area B	506	0.0420	21	506	0.1778	90	506	0.7481	379	506	0.6568	332
Management Area C	7,130	0.0420	299	7,130	0.1956	1,395	7,130	0.6733	4,801	7,130	0.6568	4,683
Management Area E	184	0.0420	8	184	0.1778	33	184	0.7481	138	184	0.6568	121
Management Area F	17,477	0.0420	734	17,477	0.0889	1,554	17,477	0.5985	10,460	17,477	-	-
TOTALS			2,042			8,878			35,846			22,755
				Alternative #5 (West)								
Management Area A		1/	992		1/	5,887		1/	20,355		1/	17,874
Management Area B			30			126			532			467
Management Area C			529			2,468			8,501			8,293
Management Area E			31			130			548			482
Proposed Research Natural Area			34			122			285			-
TOTALS			1,616			8,733			30,221			27,116
				Alternative #5 (Combined)								
Management Area A			1,972			11,693			40,423			35,493
Management Area B			51			216			911			799
Management Area C			828			3,863			13,302			12,976
Management Area E			39			163			686			603
Management Area F			734			1,554			10,460			-
Proposed Research Natural Area			34			122			285			-
GRAND TOTALS			3,658			17,611			66,067			49,871

	TOTALS		EXISTING	
Management Activity	Acres	V.D.	Acres	V.D.
		Alternative #5 (East)		
Management Area A	23,327	66,757		
Management Area B	506	1,225		
Management Area C	7,130	17,283		
Management Area E	184	457		
Management Area F	17,477	26,515		
TOTALS	48,624	112,277		120,000
		Alternative #5 (West)		
Management Area A		68,495		
Management Area B		1,654		
Management Area C		30,731		
Management Area E		1,810		
Proposed Research Natural Area		733		
TOTALS	60,429	103,423		95,000
		Alternative #5 (Combined)		
Management Area A		135,252		
Management Area B		2,879		
Management Area C		48,014		
Management Area E		2,267		
Management Area F		26,515		
Proposed Research Natural Area				
GRAND TOTALS	109,053	215,660		215,000

1/ . Outputs for Recreation Activities are same as Alternative #3 (West)

TABLE 11
DISPERSED RECREATION OUTPUTS
IN VISITOR DAYS PER YEAR BY
MANAGEMENT TYPE

RECREATION ACTIVITY	SNOWMOBILES			CROSS COUNTRY SKIING			MOTOR BIKES			4-WHEEL DRIVE		
Management Activity	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
Alternative #7 (East)												
Management Area A	27,769	0.1063	2,952	27,769	0.0078	217	27,769	0.1901	5,279	27,769	0.1357	3,768
Management Area B	202	0.0506	10	202	0.0081	2	202	0.1555	31	202	0.1111	22
Management Area C	11,270	0.1012	1,141	11,270	0.0074	83	11,270	0.1556	1,774	11,270	0.1111	1,252
Management Area D	9,383	0.1113	1,044	9,383	0.0081	76	9,383	0.1728	1,621	9,383	0.1111	1,042
TOTALS	48,624		5,147			378			8,705			6,084
Alternative #7 (West)												
Management Area A	38,413	0.0806	3,096	38,413	0.0054	207	38,413	0.1211	4,652	38,413	0.0943	3,622
Management Area B	600	0.0323	19	600	0.0052	3	600	0.0991	59	600	0.0707	42
Management Area C	10,104	0.0710	717	10,104	0.0049	50	10,104	0.0991	1,001	10,104	0.0707	714
Management Area D	11,312	0.0645	730	11,312	0.0056	63	11,312	0.1101	1,245	11,312	0.0707	800
TOTALS	60,429		4,562			323			6,957			5,178
Alternative #7 (Combined)												
Management Area A	66,182		6,048			424			9,931			7,390
Management Area B	802		29			5			90			64
Management Area C	21,374		1,858			133			2,775			1,966
Management Area D	20,695		1,774			139			2,866			1,842
TOTALS	109,053		9,709			701			15,662			11,262

RECREATION ACTIVITY	HIKING			EQUESTRIAN			HUNTING			ROCK HOUNDING		
Management Activity	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
Alternative #7 (East)												
Management Area A	27,769	0.0593	1,647	27,769	0.0173	480	27,769	0.4141	11,499	27,769	0.0247	686
Management Area B	202	0.0790	16	202	0.0173	3	202	0.3504	71	202	0.0247	5
Management Area C	11,270	0.0869	979	11,270	0.0190	214	11,270	0.3504	3,949	11,270	0.0247	278
Management Area D	9,383	0.0948	890	9,383	0.0199	187	9,383	0.3185	2,988	9,383	0.0272	255
TOTALS			3,532			884			18,507			1,224
Alternative #7 (West)												
Management Area A	38,413	0.0377	1,448	38,413	0.0110	423	38,413	0.2638	10,133	38,413	0.0157	603
Management Area B	600	0.0503	30	600	0.0110	7	600	0.1623	97	600	0.0157	9
Management Area C	10,104	0.0553	559	10,104	0.2232	122	10,104	0.2232	2,255	10,104	0.0157	159
Management Area D	11,312	0.0604	683	11,312	0.0127	144	11,312	0.2295	2,295	11,312	0.0173	196
TOTALS			2,720			696			14,780			967
Alternative #7 (Combined)												
Management Area A			3,095			903			21,632			1,289
Management Area B			46			10			168			14
Management Area C			1,538			336			6,204			437
Management Area D			1,573			331			5,283			451
GRAND TOTALS			6,252			1,580			33,287			2,191

RECREATION ACTIVITY	FISHING			GATHERING FOR PROD.			PRIM. CAMP & PICNIC			DRIVE FOR PLEASURE		
Management Activity	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.	Acres	VD/AC	V.D.
Alternative #7 (East)												
Management Area A	27,769	0.0420	1,166	27,769	0.2489	6,912	27,769	0.8603	23,890	27,769	0.7553	20,974
Management Area B	202	0.0420	8	202	0.1778	36	202	0.7481	151	202	0.6568	133
Management Area C	11,270	0.0420	473	11,270	0.1956	2,204	11,270	0.6733	7,588	11,270	0.6568	7,402
Management Area D	9,383	0.0420	394	9,383	0.1600	1,501	9,383	0.9351	8,774	9,383	0.6896	6,471
TOTALS			2,041			10,653			40,403			34,980
Alternative #7 (West)												
Management Area A	38,413	0.0267	1,026	38,413	0.1585	6,088	38,413	0.5480	21,050	38,413	0.4812	18,484
Management Area B	600	0.0267	16	600	0.1132	68	600	0.4765	286	600	0.4184	251
Management Area C	10,104	0.0267	270	10,104	0.1245	1,258	10,104	0.4289	4,334	10,104	0.4184	4,228
Management Area D	11,312	0.0294	333	11,312	0.1019	1,153	11,312	0.5956	6,737	11,312	0.4393	4,969
TOTALS			1,645			8,567			32,407			27,932
Alternative #7 (Combined)												
Management Area A			2,192			13,000			44,940			39,458
Management Area B			24			104			437			384
Management Area C			743			3,462			11,922			11,630
Management Area D			727			2,654			15,611			11,440
GRAND TOTALS			3,686			19,220			72,810			62,912

	TOTALS		EXISTING	
Management Activity	Acres	V.D.	Acres	V.D.
Alternative #7 (East)				
Management Area A	27,769	79,470	27,769	
Management Area B	202	488	202	
Management Area C	11,270	27,337	11,270	
Management Area D	9,383	25,243	9,383	
TOTALS	48,624	132,538	48,624	120,000
Alternative #7 (West)				
Management Area A	38,413	70,832	38,413	
Management Area B	600	887	600	
Management Area C	10,104	15,667	10,104	
Management Area D	11,312	19,348	11,312	
TOTALS	60,429	106,734	60,429	95,000
Alternative #7 (Combined)				
Management Area A		150,302		
Management Area B		1,375		
Management Area C		43,004		
Management Area D		44,591		
GRAND TOTALS	109,053	239,272	109,053	215,000

APPENDIX A

TIMBER PRODUCTIVITY OUTPUTS

KITTITAS L.U.P. TIMBER PRODUCTIVITY

Steps in computing commercial forest and acres by productivity class.

1. Soil productivity map made using site index measurements from last inventory plus site index measurement done on S.R.I.

2. Site index converted to productivity by using annual increment in cubic feet using tables prepared by John Teply and John Berger. Volumes discounted by 40% as per John Teply's instructions to reduce theoretical maximum possible to reflect openings, less than "normal" stocking, etc.

3. T.R.I. system commercial forest land mapping compared with map in step 1 and adjustments to original map made to reflect soils not producing trees.

4. Mulitplied acres mapped as commercial forest times the factors below to give cubic feet potential/acre/year.

Map Classification	Cubic ft/ac/yr.	Scribner Dec*c Board ft/ac/yr.
Non productive (brown)	0-19	-
Low (orange)	20-49	110
Moderate (yellow)	50-84	250
Prime (green)	85+	350

*Based on site index volume curves in bulletin 201.

5. Ellensburg W.C. Present Plan

Existing AAH/Acre = $\frac{\text{Standard CFA}}{222.0 \text{ bd ft/ac/yr}}$

$\frac{\text{Special}}{131.0}$

To find present AAH multiply 222.0 x Stand Acres
131.0 x Special Acres.

Total volume = 14,226/Acre Ellensburg x AC CFL
28,815/Acre Cle Elum x AC CFL

KITTITAS PRODUCTIVITY RATINGS

Based on SRI site index measurements. Mean annual increment from Teply and Berger. Discounted by 40% for less than normal stocking and other factor which reduce growth below the theoretical potential.

Four categories of yield were then broken out. These are based on estimated discounted mean annual increment.

Brown		Orange	Yellow	Green
Non-productive		Low	Medium	Prime
0-20 cu/ft/yr		21-49 cu/ft/yr	50-84 cu/ft/yr	85+ cu/ft/yr
SI	Species	SI	SI	SI
0-50	SAF&A	51-75	76-105	106+
0-38	LP	39-80	81-129	130+
0-56	PP	57-92	93-122	123+
0-64	DF	65-102	103-143	144+

TABLE 12

EAST SUB UNIT
TIMBER PRODUCTION

ALTERNATIVES / Management Types		1 Acres	1 P.O. 1/	2 Acres	2 P.O.	3 Acres	3 P.O.	4 Acres	4 P.O.	5 Acres	5 P.O.	6 Acres	6 P.O.	7 Acres	7 P.O.
Management Area A	NP 2/	16,408		8,385		11,182		8,385		6,387				7,273	
	H 3/	0		0		0		0		0				0	
	M 4/	2,806	701.50	2,585	646.25	2,737	684.25	2,516	629.00	636	159.00			2,221	555.25
	L 5/	28,904	3,179.44	19,971	2,196.81	21,530	2,368.30	19,665	2,163.15	16,304	1,793.44			18,275	2,010.25
	Total	48,118	3,880.94	30,941	2,843.06	35,449	3,052.55	30,566	2,792.15	23,327	1,952.44			27,769	2,565.50
Management Area B	NP	215		215		215		215		215				202	
	H	0		0		0		0		0				0	
	M	0		0		0		0		0				0	
	L	291	32.01	291	32.01	291	32.01	291	32.01	291	32.01			0	
	Total	506	32.01	506	32.01	506	32.01	506	32.01	506	32.01			202	
Management Area C	NP			3,520		5,226		3,520		3,505				4,645	
	H			0		0		0		0				0	
	M			0		0		0		0				364	91.00
	L			4,272	470.14	6,967	767.36	4,222	464.42	3,625	398.75			6,261	688.71
	Total			7,794	470.14	12,202	767.36	7,742	464.42	7,130	398.75			11,270	779.71
Management Area D	NP			4,503				4,503						4,503	
	H			0				0						0	
	M			221	55.25			221	55.25					221	55.25
	L			4,659	512.49			4,619	508.09					4,659	511.49
	Total			9,383	567.74			9,343	563.34					9,383	566.74
Management Area E	NP					0		0		0					
	H					0		0		0					
	M					69	17.25	69	17.25	0					
	L					398	43.78	398	43.78	184	20.24				
	Total					467	61.03	467	61.03	184	20.24				
Management Area F	NP									6,516					
	H									0					
	M									2,170	542.50				
	L									8,791	967.01				
	Total									17,477	1,509.51				
Rare II Undeveloped Areas	NP											6,516	0.00		
	CF 6/											10,961	1,764.72		
	Total											17,477	1,764.72		
General Forest	NP											10,107	0.00		
	CF											21,040	3,387.44		
	Total											31,147	3,387.44		
GRAND TOTAL		48,624	3,912.95	48,624	3,912.95	48,624	3,912.95	48,624	3,912.95	48,624	3,912.95	48,624	5,152.16	48,624	3,912.75

1/ Productivity Output in MBF/Year (Scribner C)
2/ Non-Productive
3/ Highly productive, able to produce 350 BF/Acre/Year
4/ Moderately productive, able to produce 250 BF/Acre/Year
5/ Low productivity, able to produce 110 BF/Acre/Year
6/ Commercial Forest, produces 161 BF/Acre/Year

TABLE 13

WEST SUB UNIT
TIMBER PRODUCTION

ALTERNATIVES / Management Types		1		2		3		4		5		6		7	
		Acres	P.O. 1/	Acres	P.O.	Acres	P.O.	Acres	P.O.	Acres	P.O.	Acres	P.O.	Acres	P.O.
Management Area A	NP 2/	9,369	0.00	1,490	0.00	2,251	0.00	1,802	0.00	2,251	0.00			2,008	0.00
	H 3/	8,241	2,884.35	6,705	2,346.75	6,594	2,307.90	5,444	1,905.40	6,594	2,307.90			6,715	2,350.25
	M 4/	25,435	6,358.75	19,772	4,943.00	20,138	5,034.50	18,758	4,689.50	20,138	5,034.50			21,966	5,491.50
	L 5/	15,071	1,657.81	6,775	745.25	8,162	897.82	7,753	852.83	8,162	897.82			7,724	849.64
	Total	58,116	10,900.91	34,742	8,035.00	37,145	8,240.22	33,757	7,447.73	37,145	8,240.22			38,413	8,691.39
Management Area B	NP														
	H	0		0		0		0		0				0	0.00
	M	582	145.50	582	145.50	582	145.50	582	145.50	582	145.50			532	133.00
	L	534	58.74	534	58.74	534	58.74	534	58.74	534	58.74			68	7.48
	Total	1,116	204.24	1,116	204.04	1,116	204.24	1,116	204.24	1,116	204.24			600	140.48
Management Area C	NP			2,147		7,118		4,935		7,118				2,407	0.00
	H			154	53.90	892	312.20	1,074	375.90	892	312.20			213	74.55
	M			2,506	626.50	5,083	1,270.75	4,235	1,058.75	5,083	1,270.75			1,091	272.75
	L			6,443	708.73	6,727	739.97	5,693	626.23	6,727	739.97			6,393	703.23
	Total			11,250	1,389.13	19,820	2,322.92	15,937	2,060.88	19,820	2,322.92			10,104	1,050.53
Management Area D	NP			5,732				2,632						5,244	0.00
	H			1,382	483.72			968	338.80					1,313	459.55
	M			3,157	789.25			2,228	557.00					3,132	783.00
	L			1,853	203.83			1,443	156.73					1,623	178.53
	Total			12,124	1,476.78			7,271	1,054.53					11,312	1,421.08
Management Area E	NP					0		0		0					
	H					755	264.25	755	264.25	755	264.25				
	M					214	53.50	214	53.50	214	53.50				
	L					182	20.02	182	20.02	182	20.02				
	Total					1,151	337.77	1,151	337.77	1,151	337.77				
Proposed Research Natural Area	NP	290		290		290		290		290		290	0.00		
	H	0		0		0		0		0		0	0.00		
	M	704	176.00	704	176.00	704	176.00	704	176.00	704	176.00				
	L	203	22.33	203	22.33	203	22.33	203	22.33	203	22.33				
	CF 6/											907	146.03		
	Total	1,197	198.33	1,197	198.33	1,197	198.33	1,197	198.33	1,197	198.33	1,197	146.03		
General Forest	NP											9,369	0.00		
	CF 6/											49,863	8,027.94		
	Total											59,232	8,027.94		
GRAND TOTAL		60,429	11,303.48	60,429	11,303.48	60,429	11,303.48	60,429	11,303.48	60,429	11,303.48	60,429	8,173.97	60,429	11,303.48

1/ Productivity Output in MBF/Year (Scribner C)
2/ Non-Productive
3/ Highly productive, able to produce 350 BF/Acre Year
4/ Moderately productive, able to produce 250 BF/Acre/Year
5/ Low productivity, able to produce 110 BF/Acre/Year
6/ Commercial Forest, produces 161 BF/Acre/Year

TABLE 14 WEST SUB UNIT STREAMSIDE MANAGEMENT UNIT
PRODUCTIVITY BY ACRES

ALTERNATIVE		1	2	3	4	5	7
Management Type and Productivity Class		ACRES	ACRES	ACRES	ACRES	ACRES	ACRES
Management Area A	NP 1/	44	28	25	28	25	30
	H 2/	355	335	335	330	335	335
	M 3/	149	93	87	93	87	115
	L 4/	268	65	39	65	39	75
	Total	816	521	486	516	486	555
Management Area B	NP						
	H						
	M						
	L	44	44	44	44	44	40
	Total	44	44	44	44	44	40
Management Area C	NP		16	19	16	19	14
	H			20	25	20	-
	M		50	62	56	62	4
	L		95	206	101	206	95
	Total		161	307	198	307	113
Management Area D	NP						
	H		20				20
	M		6				30
	L		108		102		102
	Total		134		102		152

TABLE 15 EAST SUB UNIT STREAMSIDE MANAGEMENT UNIT
PRODUCTIVITY BY ACRES

Management Area A	NP	55	55	55	55	52	20
	L	102	102	102	102	46	67
	Total	157	157	157	157	98	87
Management Area B	L	44	44	44	44	44	44
	Total	44	44	44	44	44	44
Management Area C	NP						35
	L						35
	Total						70
Management Area F	NP					3	
	L					56	
	Total					59	

1/ Non-productive.

2/ Highly productive, able to produce 350* BF/Acre/Year

3/ Moderately productive, able to produce 250* BF/Acre/Year

4/ Low productivity, able to produce 110* BF/Acre/Year

*Scribner C Based on site index tables in Bulletin 201

TABLE 16 STREAMSIDE MANAGEMENT UNIT (SMU)
TOTAL PRODUCTIVITY OUTPUT
IN MBF

ALTERNATIVE		1	2	3	4	5	7
Management Type and Productivity Class		P.O. 1/	P.O.	P.O.	P.O.	P.O.	P.O.
Management Area A	NP 2/						
	H 3/	124.25	117.25	117.25	115.50	117.25	117.25
	M 4/	37.25	23.25	21.75	23.25	21.75	28.75
	L 5/	40.70	7.15	4.29	7.15	9.35	15.62
		202.20	147.65	143.29	145.90	148.35	161.62
Management Area B	L	9.68	9.68	9.68	9.68	9.68	9.24
Management Area C	H			7.00	8.75	7.00	-
	M		12.50	15.50	14.00	15.50	1.00
	L		10.45	22.66	11.11	22.66	14.30
			22.95	45.16	33.86	45.16	24.54
Management Area D	H		7.00				7.00
	M		1.50				7.50
	L		11.88		11.22		11.22
			20.38		11.22		25.72
Management Area F	L					6.16	
						6.16	
GRAND TOTAL		211.88	180.28	198.13	189.44	203.19	211.88
30% Yield Reduction For SMU		63.56	54.08	59.44	56.83	60.96	63.56
Net Yield		148.32	126.20	138.69	132.61	142.23	148.32

1/ Productivity Output in MBF/Yr.

2/ Non-productive.

3/ Highly productive; able to produce 350* BF/Acre/Year

4/ Moderately productive, able to produce 250* BF/Acre/Year

5/ Low productivity, able to produce 110* BF/Acre/Year

*Scribner C Based on site index tables in Bulletin 201.

EXISTING

VISUAL RESOURCE MANAGEMENT (VRM) BASED ON
VISUAL QUALITY OBJECTIVE IN ACRES FOR EACH MANAGEMENT TYPE BY ALTERNATIVE

TABLE 17 WEST SUB UNIT

ALTERNATIVE	1			2			3			4			5			7		
Visual Quality Objective	R 1/	PR 2/	M 3/	R	PR	M	R	PR	M	R	PR	M	R	PR	M	R	PR	M
Allocation/Acres																		
Management Area A	4,518	28,089	25,509	4,372	18,323	12,047	4,273	17,036	15,836	4,273	15,558	13,926	4,273	17,036	15,836	4,232	19,465	14,184
Management Area B		1,116			1,116			1,116			1,116			1,116			600	
Management Area C					5,161	6,089	146	10,372	9,302	146	8,921	6,870	146	10,372	9,302		4,295	5,909
Management Area D				146	4,605	7,373					2,929	4,342				286	5,035	6,423
Management Area E							99	681	371	99	681	371	99	681	371			
Proposed Research Natural Area		190	1,007		190	1,007		190	1,007		190	1,007		190	1,007			

TABLE 18 EAST SUB UNIT

ALTERNATIVE	1			2			3			4			5			7		
Visual Quality Objective	R 1/	PR 2/	M 3/	R	PR	M	R	PR	M	R	PR	M	R	PR	M	R	PR	M
Allocation/Acres																		
Management Area A	8,899	31,898	7,321	1,636	22,748	6,557	4,625	24,173	6,651	1,638	22,393	6,537	1,206	16,594	5,527	1,306	20,453	5,518
Management Area B	55	231	220	55	231	220	55	231	220	55	231	220	55	231	220	55	131	34
Management Area C				40	7,104	650	4,267	7,285	650	40	7,052	650	1,736	4,880	514	370	9,499	1,875
Management Area D				7,223	2,046	114				7,214	2,013	114				1,223	2,046	114
Management Area E							7	440	20	7	440	20		184				
Management Area F													5,957	10,240	1,280			

1/ Retention objective is 25% of the timber commodity.

2/ Partial retention objective is 10% of the timber commodity.

3/ Modification, no retention requirements on the timber commodity.

TABLE 19 SUMMARY OF NET YIELDS TIMBER PRODUCTIVITY IN MBF FOR EACH ALTERNATIVE

ALTERNATIVE	1	2	3	4	5	6	7
Management Area A							
Total Acres	106,234	65,683	72,594	64,323	60,472		66,182
Total Productivity	14,781.85	10,878.06	11,292.77	10,239.88	10,192.66		11,256.89
SMU 30% Yield Reduction MBF 1/	60.66	44.30	42.99	43.77	44.51		48.49
VRM 25% Yield Reduction MBF 2/	222.43	81.86	113.41	72.29	61.41		92.32
VRM 10% Yield Reduction MBF 3/	715.07	559.26	516.00	477.70	446.73		547.83
Net Yield MBF	13,783.69	10,192.64	10,620.37	9,646.12	9,640.01		10,568.25
Management Area B							
Total Acres 4/	1,622	1,622	1,622	1,622	1,622		802
Total Productivity MBF	236.25	236.25	236.25	236.25	236.25		140.48
SMU 30% Yield Reduction MBF 1/	2.90	2.90	2.90	2.90	2.90		2.70
Sub Total	233.35	233.35	233.35	233.35	233.35		138.78
20% Yield Reduction MBF 5/	46.67	46.67	46.67	46.67	46.67		27.56
Net Yield MBF	186.68	186.68	186.68	186.68	186.68		110.22
Management Area C							
Total Acres		19,044	32,022	23,679	26,950		21,374
Total Productivity		1,859.27		2,525.30	2,721.67		1,830.24
SMU 30% Yield Reduction MBF 1/		6.89	13.55	10.16	6.89		7.36
Sub Total		1,852.38	3,076.73	2,515.14	2,714.78		1,822.88
25% Yield Reduction MBF 5/		463.10	769.18	628.79	678.69		455.72
Net Yield MBF		1,389.29	2,307.55	1,886.36	2,036.09		1,367.16
Management Area D							
Total Acres		21,507		16,614			20,695
Total Productivity MBF		2,044.52		1,617.87			1,987.82
80% Yield Reduction MBF 5/		1,635.62		1,294.30			1,590.26
Net Yield MBF		408.90		323.57			397.56
Management Area E							
Total Acres			1,618	1,618	1,335		
Total Productivity MBF			398.80	398.80	358.01		
30% Yield Reduction MBF 5/			383.47	383.47	320.40		
Net Yield MBF			15.33	15.33	37.61		
Management Area F							
Total Acres					17,477		
Total Productivity MBF					1,509.51		
100% Yield Reduction MBF 5/					1,509.51		
Net Yield MBF					0		
Proposed Research Natural Area							
Total Acres	1,197	1,197	1,197	1,197	1,197	1,197	
Total Productivity MBF	198.33	198.33	198.33	198.33	198.33	198.33	
100% Yield Reduction MBF 5/	198.33	198.33	198.33	198.33	198.33	198.33	
Net Yield Reduction MBF	0	0	0	0	0	0	
RARE II and General Forest							
Total Acres						107,856	
Total Productivity						13,180.10	
Visual and SMU Reduction						1,167.45	
Net Yield MBF						12,012.65	
GRAND TOTAL NET YIELD MBF	13,970.37	12,177.51	13,129.93	12,058.06	11,900.39	12,012.65	12,443.19
GRAND TOTAL ROUNDED MBF	14.0	12.2	13.1	12.1	11.9	12.0	12.4

1/ Streamside Management Unit yield reduction of 30% with respect to allocation type. Refer to Appendix A Table 16 for the amount of yield in the SMU for each alternative.

2/ Visual Resource Management yield reduction of 25% within retention areas for visual quality objective. Refer to Appendix A Table 20 for the number of acres of productivity by visual quality objective.

3/ Visual Resource Management yield reduction of 10% within partial retention areas for visual quality objective. Refer to Appendix A Tables 20 for the number of acres of productivity by visual quality objective.

4/ Refer to Appendix A Tables 12 & 13 for timber productivity in acres for east and west sub unit.

5/ All other reductions are due to management strategy within the Management type.

V.R.M. TIMBER YIELD REDUCTION RECOMMENDATIONS

Based on volume by age class tables from 1969 Wenatchee Inventory Statistics (Table 6)

	Age Class	CF/AC/YR	BF/AC/YR	% Yield of the BF & CF
A	126 - 160 (No visual restraint harvest age)	26.9	116.3	= 100
B	241 - 280 Harvest Age Retention	19.1(71% of A)	97.5(84%)	= 77.5
C	161 - 200 Harvest Age Partial Retention	22.0	108.7	= 87.5

Percent Yield Reduction = 22.5% Retention rounded to 25%
12.5% Partial Retention rounded to 10%

Timber Yield Falldowns in Management Area E

Management Area E has the potential to cause timber yield falldowns from potential outputs in three ways:

1) The effect of leaving snags in numbers sufficient to sustain 100 percent of the maximum potential populations of snag dependent species.

2) The effect of having to manipulate stands to obtain a special distribution of age classes.

3) The effect of extending rotation length beyond the culmination of mean annual increment to obtain old growth conditions.

Items 1 and 2 above are considered to have insignificant effects on timber yields in this case. Projected timber yields already take into account some falldown to meet Regional Snag Management Policy (see Appendix F). Additional snags left in Management Area E would not produce a measureable or significant timber yield change. Item 2 could be significant if the Planning Unit did not contain the desired distribution and range of age classes from which to select old growth areas. Since this is not the case, no falldown is applied for silvicultural treatment designed specifically to adjust age class distribution.

Alternatives 3 and 4

Normal Rotation:

Timber Productivity Class	Acres		MAI BF/AC/YR		Annual Yield BF
High	755	x	350	=	264,250
Moderate	283	x	250	=	70,750
Low	580	x	110	=	63,800
Total	1,618				398,800

MAI for area = 398,000 BF/YR ÷ 1,618 Acre = 246 BF/AC/YR

Extended Rotation:

Timber Productivity Class	Acres		MAI BF/AC/YR		Annual Yield BF
High	755	x	245	=	184,975
Moderate	283	x	175	=	49,975
Low	580	x	77	=	44,660
Total	1,618				279,160

MAI for area = 279,160 BF/YR ÷ 1,668 Acres = 167 BF/AC/YR

Alternative 5

Normal Rotation:

Timber Productivity Class	Acres	MAI BF/AC/YR	Annual Yield BF
High	755	350	264,250
Moderate	214	250	53,500
Low	366	110	40,260
Total	1,335		358,010

MAI for area = 358,010 BF/YR ÷ 1,335 Acres = 268 BF/AC/YR

Extended Rotation:

Timber Productivity Class	Acres		MAI BF/AC/YR		Annual Yield BF
High	755	x	245	=	184,975
Moderate	214	x	175	=	37,450
Low	366	x	77	=	28,182
Total	1,335				250,607

MAI for area = 250,607 BF/YR ÷ 1,335 Acres = 188 BF/AC/YR

The percent reduction in mean annual increment (MAI) is computed as follows:

$$\text{Percent reduction in MAI due to extended rotation} = \frac{\text{MAI for normal rotation} - \text{MAI for 240 year rotation}}{\text{MAI for normal rotation}} \times 100$$

Alternatives 3 and 4

$$\text{Percent reduction in MAI due to extended rotation} = \frac{246 - 167}{246} \times 100 = 30\%$$

Alternative 5:

$$\text{Percent reduction in MAI due to extended rotation} = \frac{268 - 188}{268} \times 100 = 30\%$$

Only true old growth areas were selected in this plan and placed in Management Area E. This acreage will have to be tripled via selection of adjacent stands in younger age classes to provide replacement old growth stands at some time in the future. Therefore, the true acreage of stands managed for old growth is calculated as follows:

Alternative	Acres of Management Area E				Acres managed for old growth	
3 & 4	1,618	x	3	=	4,854	acres
5	1,335	x	3	=	4,005	acres

The yield reduction shown in Table 22 attributable to Management Area E in Alternatives 3, 4, and 5 may be calculated as follows:

Alternative	Normal MAI BF/AC/YR		MAI Extended Rotation BF/AC/YR		Yield loss BF/AC/YR		Acres		Yield loss BF/AC/YR
3 & 4	246	-	167	=	79	x	4,854	=	383.47
5	268	-	188	=	80	x	4,005	=	320.40

APPENDIX A

SOIL PRODUCTIVITY

SOIL PRODUCTIVITY

The Soil Resource Inventory (SRI) for the Wenatchee National Forest has timber site index data in the appendix. More than three hundred site indexes were gathered from timber site index plots and from soil site plots. This data, plus soil properties, were used to develop estimated timber site index values for all land types. Some adjustments in the published values were found to be necessary in developing this information for the Kittitas Planning Unit. The most significant being to narrow the ranges, and to more closely group similar kinds of soils.

Soil complexes were evaluated on the basis of their component parts, and then a single value assigned that best represented the unit as a whole. The user is cautioned that care must be used in interpreting these units because of the extreme ranges that are often present.

Productivity grouping was accomplished in the following manner: The mean annual increment from Teply and Berger was discounted by forty percent to account for less than normal stocking and other factors which reduce growth below the theoretical potential. Four categories of yield were derived (Fig. 1). These are based on estimated discounted mean annual increment. For soils that have values for several different species, the species with the highest productivity rating was the one used for making the final grouping.

Figure 1

	Non-productive	low	medium	prime
	0-20 ft^3 acre/year	20-50 ft^3 acre/year	50-85 ft^3 acre/year	85+ ft^3 acre/year
Species	Site Index	Site Index	Site Index	Site Index
Subalpine Fir, Silver Fir	0-50	51-75	76-105	106+
Lodgepole pine	0-38	39-80	81-129	130+
Ponderosa pine	0-56	57-92	93-122	123+
Douglas Fir	0-64	65-102	103-143	144+

SOIL VALUES FOR VISUAL ABSORPTION CAPABILITY RATING

Physical factors of Visual Absorption Capability are based on selected soil qualities. Each soil (land type) that occurs in the Kittitas Planning Unit was rated. The individual qualities, henceforth, referred to as elements of Visual Absorption Capability, are: subsoil color, regeneration potential, vegetative character, and most common slope.

Numerical values were applied to each element for each soil. The sum was then used to group the soils into a high, moderate, or low grouping. In the case of soil complexes, the component land types were individually rated, and based upon percentage composition a single value for each complex was assigned.

Rating criteria for each element

Subsoil color - Point values assigned are 1, 2, or 3. A value of one denotes a light colored subsoil that has a strong contrast with surface soil color. Two denotes subsoil colors that are not highly contrasting, but are highly visible when exposed (generally centering around brown, 10 YR 5/3). A value of three denotes dark colored subsoils that have a low contrast with surface soil colors, and are therefore not very noticeable when exposed.

Regeneration potential - Point values of 1, 2, or 3 were used, one being difficult to revegetate, two moderately hard to revegetate, and three being easy to revegetate. Items considered in making these ratings include: soil texture, soil depth, aspect, elevation, precipitation zone, parent material, available water holding capacity, natural fertility, organic matter content, and non-wettability characteristics if present.

Vegetative character - Point values of 1, 2, or 3 were used. A value of one is assigned to plant communities overstory canopy; two identifies a broken or clumpy overstory pattern; and three identifies an open canopy. Ratings are based upon the basic plant community groups identified in the soil resource inventory. Groupings are as follows:

Continuous: mixed conifers, associated species, and Douglas-fir - ponderosa pine.
Broken or clumpy: subalpine fir; ponderosa pine - Douglas-fir; and bunchgrass - ponderosa pine.
Open: bunchgrass or meadow.

Most common slope - Because slope has an overriding effect on visual values, point values of 1, 6, and 9 are used. A value of one identifies slopes steeper than 60 percent; a value of six for slopes ranging between 40 and 60 percent; and a value of nine for slopes flatter than 40 percent. Slope groups used in making this rating are the same as those used in the soil resource inventory.

Classification - Point values for each element for each soil were totaled. Then, soils with a point value of nine or less received a low VAC rating; those with a value of ten through thirteen, a moderate VAC rating; and those with a value of fourteen or more, a high VAC rating.

SOIL LOGGING HAZARD RATINGS

Soil logging hazard ratings for the Kittitas Planning Unit are based upon slope, number of drainage dissections, compaction hazard, erosion hazard, and displacement hazard. In a few instances there are some overriding factors that placed the particular land type into a high hazard category. These overriding factors are: wet meadow, alpine meadow, talus, rockland, snow and ice, barren slides, and rock outcrops.

To arrive at a low, moderate, or high logging hazard rating, each element was rated on a numerical basis (1, 2, or 3). Next, the values were totaled for each land type. Those with values of nine or less are low; those with 10 or 11 are moderate; and those above 12 are high.

Rating criteria for each element

Slope - The most common slope group as defined in the SRI was used to rate each land type. Slopes from 0 to 40 percent were rated 1, those with slopes of 40 to 60 percent were rated 2, and those steeper than 60 percent were rated 3.

Drains - Refers to the number of drainages per lineal mile. Land types that have less than four per mile were rated 1, those with four to nine drains per mile rated 2, and those with more than nine drains per mile rated 3. A drainageway, as used here, is defined to be one that is ten feet or more deep and twenty feet or more wide at the top.

Compaction - Relates to the ease with which a land type may be compacted to a point that would not meet the allowable forest standard. Soils that are very resistant to this degree of compaction are rated 1, those with a moderate resistance are rated 2, and those that are easily compacted are rated 3. This rating is based upon conditions when the land type is most susceptible to compaction.

Erosion - Relates to the erosiveness of each land type. This rating takes into account the cohesiveness of the soil material, to some degree the percentage of slope, length of slope, shape of slope, aspect, infiltration rate, organic matter content, soil texture, and rockiness. This rating is based upon exposed bare mineral soil material created by disturbance, fire, etc.

A rating of 1 indicates a reasonably stable soil, 2 indicates a moderately stable soil, and 3 indicates a soil that is very easily eroded. Quantitative values are not representative because of differences in soil texture, bulk, density, etc.

Displacement - Relates to the ease with which any land type may have the protective surface cover removed, thereby exposing mineral soil to surface erosion. Soils rated 1 have a good grass cover and are, therefore, very resistant to displacement. Soils rated 2 have a moderate resistance to soil displacement damage. Soils rated 3 are easily displaced and consequently are difficult to manage and still meet the forest displacement standard.

SOIL ROADABILITY HAZARD

Soil roadability hazard ratings for the Kittitas Planning Unit are based upon slope, number of drainages, natural stability, cutbank failure hazard, stability change from roading, and cutbank slough and ravel. A category called "other" was added to add special weight to the total point value for a few select land types.

The different elements were evaluated for each land type, then the values totaled. Total point values of nine or less have a low roadability hazard. Roads can be constructed on those soils with a minimum of cost or hazard of encountering or creating problems. Soils with point values of ten through twelve have a moderate hazard. Cost of construction increases significantly as does the risk of encountering or creating major resource problems. Soils that have point values of thirteen or more are difficult and expensive to road because of inherent problems or the ones that develop as a result of construction.

Criteria for rating the different elements

Slope - The most common slope group as defined in the SRI was used to rate each land type. Slopes from 1 to 40 percent were rated 1, those from 40 to 60 percent were rated 2, and those steeper than 60 percent were rated 3.

Number of drainages - This rating is based upon the number of drainages per lineal mile. A drainageway, as used here, is defined as being ten feet or more deep, and twenty feet or more wide, at the top. Land types that have less than four drains per mile are rated 1, those with four through nine are rated 2, and those with more than nine are rated 3.

This factor is important to roadablilty because it affects road alignment, the number of culverts, and water quality.

Natural stability - This rating is based upon the lands resistance to mass failures under natural conditions. Coarse textured soils are generally non-plastic and are as a result very stable, some fine and moderately fine textured soils, on the other hand, are very plastic when wet and are very unstable.

Soils that are the most stable are rated 1, those that are least stable are rated 3, and those that are intermediate are rated 2. Roading often increases the risk of failure regardless of what the natural rating is. Where possible, avoidance of highly unstable soils will save both time and money, as well as eliminate many impacts on resource values.

Cutbank failure hazard - This rating is based upon cutbanks that are more than five feet high, and have cut slope ratios of 1 to 1 or steeper. Land types rated 1 have a low failure hazard and are, therefore, stable

(less than 10 cubic yards of failure per mile per year). Those rated 2 are moderately stable and can be expected to have from 2 to 3 failures (10 cubic yards each) per mile per year. Those rated 3 are unstable or very unsuitable and can be expected to have 4 or more failures (10 cubic yards each) per mile per year.

Failure hazards are closely related to soil texture, depth of unconsolidated material, natural angle of repose, cohesiveness, and type of bedrock.

Stability change from road construction - Relates to the alteration in land characteristics created by road building such as: removal of toe support, overloading unstable materials, changing surface water runoff patterns, changing ground water hydrology, weakening geologic structure, etc. A rating of 1 is given for soils that are basically unaffected stability wise as a result of road construction. A rating of 2 is assigned to land types that can be expected to have a significant increase in number of stability problems that are road related. A rating of 3 is given for soils that can be expected to have a large increase in the number of failures that are road related.

Cutbank slough and ravel - Ratings are estimates based upon field experience, soil characteristics, aspect, and height of cutbank above bedrock. Forest cutbank design is generally as follows: cutbanks less than five feet high will be built on a 1½ : 1 or flatter slope; cutbanks that are five to ten feet high will be built on a 1 : 1 slope; and cutbanks more than ten feet high will be built on a 3/4 : 1 slope. All unconsolidated materials will slough and ravel until they reach their natural angle of repose which is often less than 1¼ : 1.

A low hazard means that there will be minor problems that require occasional road maintenance, for these soils a value of 1 is assigned. Moderate refers to roads that require annual road maintenance to clean up the road surface, and ditches, these soils are assigned a value of 2. High refers to soils that slough and ravel easily requiring a lot of maintenance to clean culverts and ditches (annual maintenance is not enough), these soils are assigned a value of 3.

SOIL MASS WASTE HAZARD

Soil mass waste hazard ratings for the Kittitas Planning Unit are based upon natural stability, cutbank failure hazard, and most common slope group. Ratings of low, moderate, or high were arrived at by totaling the point values (1, 2, or 3 for each element) of the three elements. Values of five or less receive a low rating, values of six or seven a moderate rating, and values of eight or more a high rating. For soil complexes the component parts were rated individually, then based upon percentage composition a single rating for the complex was selected.

Rating criteria for the elements

Natural stability - This rating is based upon the lands resistance to mass failures under natural conditions. Coarse textured soils are generally nonplastic and are, as a result, very stable, some fine and moderately fine textured soils, on the other hand, are very plastic when wet and are very unstable..

Soils that are the most stable are given a point value of 1, those that are least stable are given a value of 3, and those that are intermediate are rated 2. Roading often increases the risk of failure regardless of what the natural rating is. Wherever possible, avoidance of highly unstable soils will save both time and money, as well as eliminate many impacts on resource values.

Cutbank failure hazard - This rating is based upon cutbanks that are more than five feet high, and have cut slope ratios of 1 : 1 or steeper. Land types rated 1 have a low failure hazard and are therefore stable (less than 10 cubic yards of failure per mile per year). Those rated 2 are moderately stable and can be expected to have from 2 to 3 failures (10 cubic yards each) per mile per year. Those rated 3 are unstable or very unstable and can be expected to have 4 or more failures (10 cubic yards each) per mile per year.

Failure hazards are closely related to soil texture, depth of unconsolidated material, natural angle of repose, cohesiveness, and type of bedrock.

Slope - The most common slope group as designed in the SRI was used to rate each land type. Slopes from 0 to 40 percent were rated 1, those with slopes of 40 to 60 percent were rated 2, and those steeper than 60 percent were rated 3.

APPENDIX A

VISUAL RESOURCE OUTPUTS

CALCULATION OF VISUAL RESOURCE MANAGEMENT ACREAGE

1. Total acreage for each Visual Objective within a Management type was measured on overlays of the different alternatives except Management Area A in Alternatives 2, 3, 4, and 5. This allocation was calculated by subtracting the sum of the total acres of a visual quality objective within the allocations in their respective alternative from the grand total of Alternative 1 in the same visual quality objective.

   Example:

   Given: Measurements of acres for visual quality objectives within allocations. Refer to Table 17, Alternative 2, Appendix A-26.

Management Area B		
Partial Retention (PR)	=	1,116 Acres
Management Area C		
Modification (M)	=	6,089 Acres
Management Area D		
Retention (R)	=	146 Acres
PR	=	4,605 Acres
M	=	7,373 Acres

   Sum of the measurements of Alternative 1 to give us Grand Totals.

R	=	4,518 Acres
PR	=	29,395 Acres
M	=	26,516 Acres

   Solution: (a) Sum total acres by Visual Quality Objectives

	R Acres	PR Acres	M Acres
Management Area B		1,116	
Management Area C		5,161	6,089
Management Area D	146	4,605	7,373
Proposed Research Natural Area		190	1,007
	146	11,072	14,469

   (b) Subtract Sums ( ) in (a) from grand totals in Alternative 1.

	R	PR	M
Alt. 1	4,518 acres	2,9395 acres	2,6516 acres
(-)	146 acres	11,072 acres	14,469 acres
	4,372 acres	18,323 acres	12,047 acres

   = Totals for Management Area A

2. Alternative 1 was used as a base in which to check productivity and visual objective acres for all the other alternatives and their management areas. Acreage was determined by planimetering Visual Quality Objectives and Timber Productivity overlays to arrive at timber production rates within the visual quality objectives. Also, as stated in Step 1, total acres for each Management Area in respect to their alternative were also planimetered.

3. All other productivity rates were calculated by distributing the number of acres within a Visual Quality Objective by productivity for each type e.g.: (a) Find distributing factor for visual quality standard within Management type:

Given: Management Area A, Alternative 2, West

Total Acreage	=	34,742
Total acres in Retention	=	4,372
Total acres in Partial Retention	=	18,323
Total acres in Modification	=	12,047
	∴	34,742

Solution:

Retention 4372 ÷ 34,742	=	Factor 0.1258
Partial Retention 18,323 ÷ 34,742	=	0.5274
Modification 12,047 ÷ 34,742	=	0.3468

(b) Distribute productivity class acreage by using Visual Quality Objective Factor:

Given: Refer to solution in (a)
Refer to timber productivity acreage Table 13,Appendix A-23 for Management Area A, Alternative 2 West.

Solution:
Retention Acres:

Non-Productive (NP)	1,490 Acres	x Factor 0.1258	=	187 Acres
Highly Productive (H)	6,705 Acres	x Factor 0.1258	=	844 Acres
Moderately Productive (M)	19,772 Acres	x Factor 0.1258	=	2,488 Acres
Low Production (L)	6,775 Acres	x Factor 0.1258	=	853 Acres
			∴	4,372 Acres

Check given in (a)

Solution (continued)

Partial Retention Acres

NP	1,490 Acres	x Factor 0.5274	=	786 Acres
H	6,705 Acres	x Factor 0.5274	=	3,536 Acres
M	19,772 Acres	x Factor 0.5274	=	10,428 Acres
L	6,775 Acres	x Factor 0.5274	=	3,573 Acres

∴18,323 Acres given in (a)

Modification Acres

NP	1,490 Acres	x Factor 0.3468	=	517 Acres
H	6,705 Acres	x Factor 0.3468	=	2,325 Acres
M	19,772 Acres	x Factor 0.3468	=	6,856 Acres
L	6,775 Acres	x Factor 0.3468	=	2,349 Acres

∴ 12,047 Acres given in (a)

TABLE 26
VISUAL QUALITY OBJECTIVE IN ACRES FOR
EACH ALTERNATIVE BY MANAGEMENT TYPE

(EAST SUB UNIT)

VISUAL QUALITY BY ALTERNATIVE	1				2				3				4				5				6				7			
	P	R	PR	M	P	R	PR	M	P	R	PR	M	P	R	PR	M	P	R	PR	M	P	R	PR	M	P	R	PR	M
Management TYPE																												
Management Area A		8,899	31,898	7,321		1,636	22,748	6,557		4,625	24,173	6,651		1,638	22,393	6,537		1,206	16,594	5,527						1,326	21,062	5,381
Management Area B		55	231	220		55	231	220		55	231	220		55	231	220		55	231	220						67		135
Management Area C						40	7,104	650		4,267	7,285	650		40	7,052	650		1,736	4,880	514						380	8,910	1,980
Management Area D						7,223	2,046	114						7,214	2,013	114											9,383	
Management Area E										7	440	20		7	440	20			184									
Management Area F																		17,477										
RARE II Undeveloped Area																						5,957	10,246	1,280				
General Forest																						2,997	21,883	6,261				
TOTALS		8,954	32,129	7,541		8,954	32,129	7,541		8,954	32,129	7,541		8,954	32,129	7,541		20,474	21,889	6,261		8,954	32,129	7,541		1,773	39,335	7,496

(WEST SUB UNIT)

ALTERNATIVE	1				2				3				4				5				6				7			
	P	R	PR	M	P	R	PR	M	P	R	PR	M	P	R	PR	M	P	R	PR	M	P	R	PR	M	P	R	PR	M
VISUAL QUALITY IN ACRES																												
Management Area A		1,536	25,626	30,954		1,500	15,860	17,382		1,471	14,688	20,986		1,471	13,210	19,076		1,471	14,688	20,986						500	17,200	20,713
Management Area B			1,116				1,116				1,116				1,116				1,116								600	
Management Area C							5,161	6,089		36	10,372	9,412		36	8,921	6,980		36	10,372	9,412							6,320	3,784
Management Area D						36	4,605	7,483							2,929	4,342											11,312	
Management Area E										29	566	556		29	566	556		29	566	556								
Proposed Research Natural Area	1,197				1,197				1,197				1,197				1,197						190	1,007				
General Forest																						4,518	29,205	25,509				
TOTALS	1,197	1,536	26,742	30,954	1,197	1,536	26,742	30,954	1,197	1,536	26,742	30,954	1,197	1,536	26,742	30,954	1,197	1,536	26,742	30,954		4,518	29,395	26,516		500	35,432	24,497

(COMBINED UNITS)

ALTERNATIVE	1				2				3				4				5				6				7			
	P	R	PR	M	P	R	PR	M	P	R	PR	M	P	R	PR	M	P	R	PR	M	P	R	PR	M	P	R	PR	M
VISUAL QUALITY IN ACRES																												
Management Area A		10,435	57,524	38,275		3,136	38,608	23,939		6,096	38,861	27,637		3,109	35,603	25,613		2,677	31,282	26,513						1,826	38,262	26,094
Management Area B		55	1,347	220		55	1,347	220		55	1,347	220		55	1,347	220		55	1,347	220						67	600	135
Management Area C						40	12,265	6,739		4,303	17,657	10,062		96	15,973	7,630		1,772	15,252	9,926						380	15,230	5,764
Management Area D						7,259	6,651	7,597						7,214	4,942	4,456											20,695	
Management Area E										36	1,006	576		36	1,006	576		29	750	556								
Management Area F																		17,477										
Proposed Research Natural Area	1,197				1,197				1,197				1,197				1,197						190	1,007				
RARE II Undeveloped Area																						5,957	10,246	1,280				
General Forest																						7,515	51,088	31,770				
TOTALS	1,197	10,490	58,871	38,495	1,197	10,490	58,871	38,495	1,197	10,490	58,871	38,495	1,197	10,490	58,871	38,495	1,197	22,010	48,631	37,215		13,472	61,524	34,057		2,273	74,787	31,993

APPENDIX A

WATER YIELD OUTPUTS

TABLE 21
PERCENT CHANGE IN EXISTING WATER
YIELD COEFFICIENT FOR BOTH SUBUNITS BY
ALTERNATIVE AND ALLOCATION TYPE

ALTERNATIVE	#1		#2		#3		#4		#5		#6 EXISTING		#7 PREFERRED	
	± %	± %	± %	± %	± %	± %	± %	± %	± %	± %	AF/AC 1/	AF/AC 1/	± %	± %
	EAST	WEST	EAST	WEST	EAST	WEST	EAST	WEST	EAST	WEST	EAST	WEST	EAST	WEST
TYPE														
Management Area A	+9	+17	+9	+17	+9	+17	+9	+17	+9	+17	-	-	+9	+17
Management Area B	+7	+14	+7	+14	+7	+14	+7	+14	+7	+14	-	-	+7	+14
Management Area C	+7	+14	+7	+14	+7	+14	+7	+14	+7	+14	-	-	+7	+14
Management Area D	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	-	-	N/C	N/C
Management Area E	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	-	-	-	-
Management Area F	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	-	-	-	-
Proposed Research Natural Area	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	-	N/C	-	-
RARE II Undeveloped Areas	-	-	-	-	-	-	-	-	-	-	N/C	-	-	-
General Forest	-	-	-	-	-	-	-	-	-	-	.4200	4.1500	-	-

1/ A.F./AC. = Acre Feet/Acre

TABLE 22
WATER YIELD OUTPUTS IN ACRE FEET
FOR EACH MANAGEMENT TYPE BY ALTERNATIVE

(EAST SUBUNIT)

ALTERNATIVE	#1			#2			#3			#4			#5			#6 EXISTING			#7 PREFERRED		
	1/ AF/AC	ACRES	ACRE FEET	1/ AF/AC	ACRES	ACRE FEET	1/ AF/AC	ACRES	ACRE FEET	1/ AF/AC	ACRES	ACRE FEET	1/ AF/AC	ACRES	ACRE FEET	1/ AF/AC	ACRES	ACRE FEET	1/ AF/AC	ACRES	ACRE FEET
MANAGEMENT TYPE																					
Management Area A	0.4578	48,118	22,028	0.4578	30,941	14,165	0.4578	35,449	16,229	0.4578	30,566	13,993	0.4578	23,327	10,679	-	-	-	0.4578	27,769	12,713
Management Area B	0.4494	506	227	0.4494	506	227	0.4494	506	227	0.4494	506	227	0.4494	506	227	-	-	-	0.4494	202	91
Management Area C	0.4494	-	-	0.4494	7,794	3,503	0.4494	12,202	5,484	0.4494	7,742	3,479	0.4494	7,130	3,204	-	-	-	0.4494	11,270	5,064
Management Area D	0.4200	-	-	0.4200	9,383	3,941	0.4200	-	-	0.4200	9,343	3,924	0.4200	-	-	-	-	-	0.4200	9,383	3,941
Management Area E	0.4200	-	-	0.4200	-	-	0.4200	467	196	0.4200	467	196	0.4200	184	77	-	-	-	0.4200	-	-
Management Area F	0.4200	-	-	0.4200	-	-	0.4200	-	-	0.4200	-	-	0.4200	17,477	7,340	-	-	-	0.4200	-	-
RARE II	-	-	-	0.4200	-	-	0.4200	-	-	0.4200	-	-	0.4200	-	-	0.4200	17,477	7,340	-	-	-
General Forest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4200	31,147	13,082	-	-	-
TOTALS	-	48,624	22,255	-	48,624	21,836	-	48,624	22,136	-	48,624	21,819	-	48,624	21,527	-	48,624	20,422	-	48,624	21,809

1/ Converting factor adjusted from Existing Situation to take into account predicted change in Water Yield for each Allocation. Refer to Table 21.

TABLE 23
WATER YIELD OUTPUTS IN ACRE FEET
FOR EACH MANAGEMENT TYPE BY ALTERNATIVE

(WEST SUBUNIT)

ALTERNATIVE	#1			#2			#3			#4			#5			#6			#7 PREFERRED		
	1/ AF/AC	ACRES	ACRE FEET	1/ AF/AC	ACRES	ACRE FEET	1/ AF/AC	ACRES	ACRE FEET	1/ AF/AC	ACRES	ACRE FEET	1/ AF/AC	ACRES	ACRE FEET	1/ AF/AC	ACRES	ACRE FEET	1/ AF/AC	ACRES	ACRE FEET
MANAGEMENT TYPE																					
Management Area A	4.856	58,116	282,211	4.856	34,742	168,707	4.856	37,145	180,376	4.856	33,757	163,924	4.856	37,145	180,376	-	-	-	4.856	38,413	186,534
Management Area B	4.731	1,116	5,280	4.731	1,116	5,280	4.731	1,116	5,280	4.731	1,116	5,280	4.731	1,116	5,280	-	-	-	4.731	600	2,839
Management Area C	4.731	-	-	4.731	11,250	53,224	4.731	19,820	93,768	4.731	15,937	75,398	4.731	19,820	93,768	-	-	-	4.731	10,104	47,802
Management Area D	4.150	-	-	4.150	12,124	50,315	4.150	-	-	4.150	7,271	30,175	4.150	-	-	-	-	-	4.150	11,312	46,945
Management Area E	4.150	-	-	4.150	-	-	4.150	1,151	4,777	4.150	1,151	4,777	4.150	1,151	4,777	-	-	-	4.150	-	-
Proposed Research Natural Area	4.150	1,197	4,968	4.150	1,197	4,968	4.150	1,197	4,968	4.150	1,197	4,968	4.150	1,197	4,968	4.150	1,197	4,968	-	-	-
General Forest	4.150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.150	59,232	245,812	-	-	-
TOTALS	-	60,429	292,459	-	60,429	282,494	-	60,429	289,169	-	60,429	284,522	-	60,429	289,169	-	60,429	250,780	-	60,429	284,120

1/ Converting factor adjusted from Existing Situation to take into account predicted change in Water Yield for each Allocation. Refer to Table 21.

APPENDIX A

WILDLIFE (ELK) OUTPUTS

Table 24

The following table depicts converting factors for determining elk per acre by Management Type for Kittitas Planning Unit:

Management Type	Current Elk Per Acre	Expected Elk Per Acre
Management Area A 1/	.01	.01
Management Area B 2/	.01	.02
Management Area C 2/	.01	.02
Management Area D 3/	.01	.01
Management Area E 1/	.01	.01
Management Area F 3/	.01	.01
Proposed Research Natural Area	.01	.01
RARE II Undeveloped Area	.01	.01
General Forest	.01	.01

1/ High road density and access for public use.

2/ Low to Moderate road density and access for public use.

3/ No roads within area.

EAST SUBUNIT

TABLE 25 ELK NUMBER BY MANAGEMENT TYPE FOR EACH ALTERNATIVE

ALTERNATIVE	#1			#2			#3			#4			#5			#6 EXISTING			#7 PREFERRED		
	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.
MANAGEMENT TYPE																					
Management Area A	48,118	0.01	481	30,941	0.01	309	35,449	0.01	354	30,566	0.01	306	23,326	0.01	233	-	-	-	27,769	0.01	278
Management Area B	506	0.02	10	506	0.02	10	506	0.02	10	506	0.02	10	506	0.02	10	-	-	-	202	0.02	4
Management Area C	-	-	-	7,794	0.02	156	12,202	0.02	244	7,742	0.02	155	7,130	0.02	143	-	-	-	11,270	0.02	225
Management Area D	-	-	-	9,383	0.01	94	-	-	-	9,343	0.01	93	-	-	-	-	-	-	9,383	0.01	94
Management Area E	-	-	-	-	-	-	467	0.01	5	467	0.01	5	184	0.01	2	-	-	-	-	-	-
Management Area F	-	-	-	-	-	-	-	-	-	-	-	-	17,478	0.01	175	-	-	-	-	-	-
RARE II Undeveloped Area	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17,478	0.01	175	-	-	-
General Forest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31,146	0.01	312	-	-	-
GRAND TOTAL	48,624	-	491	48,624	-	569	48,624	-	613	48,624	-	569	48,624	--	563	48,624	-	487	48,624	-	601

WEST SUBUNIT

TABLE 26 ELK NUMBER BY MANAGEMENT TYPE FOR EACH ALTERNATIVE

ALTERNATIVE	#1			#2			#3			#4			#5			#6 EXISTING			#7 PREFERRED		
	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.
MANAGEMENT TYPE																					
Management Area A	58,116	0.01	581	34,742	0.01	347	37,145	0.01	371	33,757	0.01	338	37,145	0.01	371	-	-	-	38,413	0.01	384
Management Area B	1,116	0.02	22	1,116	0.02	22	1,116	0.02	22	1,116	0.02	22	1,116	0.02	22	-	-	-	600	0.02	12
Management Area C	-	-	-	11,250	0.02	225	19,820	0.02	396	15,937	0.02	319	19,820	0.02	396	-	-	-	10,104	0.02	202
Management Area D	-	-	-	12,124	0.01	121	-	-	-	7,271	0.01	73	-	-	-	-	-	-	11,312	0.01	113
Management Area E	-	-	-	-	-	-	1,151	0.01	12	1,151	0.01	12	1,151	0.01	12	-	-	-	-	-	-
Proposed Research Natural Area	1,197	0.01	12	1,197	0.01	12	1,197	0.01	12	1,197	0.01	12	1,197	0.01	12	1,197	0.01	12	-	-	-
General Forest	-	-	-	--	-	-	-	-	-	-	-	-	-	-	-	59,232	0.01	592	-	-	-
GRAND TOTAL	60,429	-	615	60,429	-	727	60,429	-	813	60,429	-	776	60,429	-	813	60,429	-	604	60,429	-	711

KITTITAS PLANNING UNIT SUMMARY
(EAST AND WEST SUBUNITS)

TABLE 27 ELK NUMBER BY MANAGEMENT TYPE FOR EACH ALTERNATIVE

ALTERNATIVE	#1			#2			#3			#4			#5			#6 EXISTING			#7 PREFERRED		
	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.	ACRES	ELK/ ACRE	ELK NO.
MANAGEMENT TYPE																					
Management Area A	106,234	0.01	1,062	65,683	0.01	656	72,594	0.01	725	64,323	0.01	644	60,471	0.01	604	-	-	-	66,182	0.01	662
Management Area B	1,622	0.02	32	1,622	0.02	32	1,622	0.02	32	1,622	0.02	32	1,622	0.02	32	-	-	-	802	0.02	16
Management Area C	-	-	-	19,044	0.02	381	32,022	0.02	640	23,679	0.02	474	26,950	0.02	539	-	-	-	21,374	0.02	427
Management Area D	-	-	-	21,507	0.01	215	-	-	-	16,614	0.01	166	-	-	-	-	-	-	20,695	0.01	207
Management Area E	-	-	-	-	-	-	1,618	0.01	17	1,618	0.01	17	1,335	0.01	14	-	-	-	-	-	-
Management Area F	-	-	-	-	-	-	-	-	-	-	-	-	17,478	0.01	175	-	-	-	-	-	-
Proposed Research Natural Area	1,197	0.01	12	1,197	0.01	12	1,197	0.01	12	1,197	0.01	12	1,197	0.01	12	1,197	0.01	12	-	-	-
RARE II Undeveloped Area	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17,478	0.01	175	-	-	-
General Forest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90,378	0.01	904	-	-	-
GRAND TOTAL	109,053	-	1,106	109,053	-	1,296	109,053	-	1,426	109,053	-	1,346	109,053	-	1,376	109,053	-	1,091	109,053	-	1,312

APPENDIX B

HISTORICAL, ARCHEOLOGICAL AND CULTURAL

STATE OF
WASHINGTON

Dixy Lee Ray
Governor

STATE HISTORIC PRESERVATION OFFICER
7150 Cleanwater Lane, Olympia, Washington 98504 206/753-4011

July 1, 1977

Mr. Jim Bannister
Cultural Resource Coordinator
Wenatchee National Forest
Ellensburg Ranger District
Box 217
Ellensburg, Washington 98926

Dear Mr. Bannister:

Thank you for your letter concerning the Kittitas Land Use Plan. At the present time, there are no properties in the planning area scheduled for review in 1977 for National Register eligibility nor are we aware of other sites in the area not already identified in your inventory.

We are unable to concur with your determination of no effect in that we have not had the opportunity to review the Kittitas Land Use Plan. Any determination that is made must come as a result of a review of the total project, plan, or proposal. We would be happy to furnish an opinion once the Land Use Plan is available.

Sincerely,

Jeanne M. Welch

Jeanne M. Welch, Acting
State Historic Preservation
Officer

wf

WASHINGTON STATE
PARKS & RECREATION COMMISSION

LOCATION: THURSTON AIRDUSTRIAL CENTER PHONE 753-5755

P. O. BOX 1128 OLYMPIA, WASHINGTON 98504

January 4, 1977

IN REPLY REFER TO:
40-1900-0340

Mr. James F. Bannister
Cultural Resource Coordinator
Wenatchee National Forest
Ellensburg Ranger Station
P. O. Box 217
Ellensburg, Washington 98926

Dear Mr. Bannister:

Your letter to Mr. Skolnik of December 29 has been referred to me for reply. In regard to the Virden Arrastra, it is currently listed on the State Register, and will remain so until we receive word that the ruins have been removed from the site. We have no plans to submit the nomination to the National Register of Historic Places, as its eligibility is doubtful in its present condition.

Presently there are no pending nominations to the National Register from the Wenatchee National Forest areas which you described. Properties in the general vicinity which have already been placed on the Register are:

Salmon la Sac Guard Station, Wenatchee National Forest
Blewett Arrastra, Culver Gulch on Swauk Pass, U. S. Route 97
Black Warrior Mine, Horseshoe Basin, North Cascades National Park
Stehekin School, Stehekin, Lake Chelan National Recreation Area
Courtney Cabin, Stehekin, Lake Chelan National Recreation Area
Buckner Cabin, Stehekin, Lake Chelan National Recreation Area

If we can be of any further assistance, please contact our office.

Sincerely,

ARTHUR M. SKOLNIK
State Conservator

Florence K. Lentz

Florence K. Lentz
Historic Preservation
Specialist

kb

Wenatchee National Forest
Ellensburg Ranger District
Box 217, Ellensburg, WENATCHEE, WA 98926

JUN 20'77

2360
June 15, 1977

SUPR	RES
ADM	ENG
PS	FIRE
CONT	LOG/MGN
FISC	VIS
M&E	WS
PER	S&W
PAB	REC.
BGT	T&R
PLAN	DR
	TE

Ms. Jeanne Welch
Office of Historic Preservation
P.O. Box 1128
Olympia, Washington 98501

Dear Ms. Welch:

Enclosed are copies of (1) Cultural Resource findings that will be put into the Kittitas Land Use Plan, (2) a map of the Kittitas Land Use Planning Area.

This plan will have no direct ground disturbing activities involved with it. It will however authorize projects such as timber harvest and road building, that will do some disturbance. Each project will have a individual Environmental Analysis Report that will deal with mitigation of impacts to Cultural Resources, if impacts are likely to occur.

We would appreciate your response to the following questions at the earliest possible time as we are trying to meet our schedule for completing this plan:

1. Are there any sites listed on or being considered for listing on the National Register of Historic Places for this area?
2. Do you know of any other inventoried sites, or sites that should be inventoried and evaluated?
3. Do you concur with our determination of no effect.

If you need further information about the proposed plan, please contact Bob Benson in the Wenatchee National Forest Supervisors Office, 509-662-4372, who is preparing the plan.

Sincerely,

Jim Bannister

JIM BANNISTER
Cultural Resource Coordinator

Enclosures
cc: Cal Dunnell
Bob Benson
Jim Bannister

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Wenatchee National Forest
Box 811, Wenatchee, WA 98801

8200

January 25, 1978

Ms. Jeanne M. Welch
Acting State Historic Preservation Officer
7150 Clearewater Lane
Olympia, WA 98504

Dear Ms. Welch:

Enclosed is a review draft and maps of the Kittitas Land Management Plan, Wenatchee National Forest. The historical, archeological, and cultural items are on pages 11-13, 32, 40 and C-1 through C-7 in Appendix C. Please review these sections and the Draft Statement.

Prior to making final revisions in the Draft Environmental Statement and distributing it to the public, we would like to receive your comments on the historical sections. We would also like your concurrence on our "no effect" determination so that it can be included in the Draft Environmental Statement.

Please return the review draft with the Determination of Effect form as soon as possible.

Sincerely,

ROBERT C. BENSON
Planning Team Leader

Enclosures

cc:
Tiedemann

FOREST SERVICE DETERMINATION OF EFFECT

☒ We have determined that the proposed project will have "no effect" on any listed or eligible cultural resources. We will retain documentation of this determination and proceed with project implementation as proposed if you do not respond within 10 days.

☐ We have determined that the proposed project will have "no adverse effect" on any listed or eligible cultural resources. We will document this determination to the Advisory Council on Historic Preservation and proceed with project implementation as proposed if you do not respond within 10 days.

☐ We have determined that the proposed project will have "adverse effect" on cultural resource(s) listed on or eligible for the National Register of Historic Places. A description of each affected resource, and a plan to mitigate anticipated adverse effects are attached. Please advise us of your opinion within 10 days so that we may proceed with development of a preliminary case report.

Attachments:

___ Project description
___ Description of listed or eligible properties
___ Plan for mitigating adverse effects

FOREST SERVICE

by Carl C Benson

title Landscape planner

date 1-25-78

SHPO use:

___ concur

___ do not concur

(see enclosure)

SHPO

by _____

title _____

date _____

STATE OF WASHINGTON

OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION
111 West Twenty-First Avenue, Olympia, Washington 98504 206/753-4011

Dixy Lee Ray
Governor

February 23, 1978

Robert C. Benson
Planning Team Leader
Wenatchee National Forest
Box 811
Wenatchee, Washington 98801

Dear Mr. Benson:

Thank you for the opportunity to review the Draft Environmental Statement for the Kittitas Land Management Plan. For the most part, I found that careful, thorough, consideration has been given to the cultural resources. However, the inclusion of specific site locations in Appendix C is inappropriate; site locational data are exempt from public disclosure pursuant to RCW 27.53.070 and 5 U.S.C. 552 (b)(5). These data should be removed prior to public dissemination of the Environmental Statement. I am enclosing for your information a copy of the policy statement regarding cultural resource data by the Office of General Council, USDA Forest Service.

As is noted in Section IV Environmental Impacts, I Archaeological and Historical (p. 40), the Management Plan in itself does not constitute an effect on the cultural resources. The plan does, however, call for the implementation of activities which can be expected to adversely affect the cultural resource base. The statement in Section III Evaluation Criteria, Constraints, Part 5 (p. 32) that cultural resources will be inventoried and evaluated prior to the implementation of specific projects constitutes an adequate mitigation plan at this time. Individual projects will of course require individual consideration of the cultural resources.

In addition to the Office of General Council Statement, I am enclosing some suggestions for minor modifications of portions of the Environmental Statement dealing with cultural resources. I hope you will find these helpful. Again, let me congratulate you on a job well done.

Sincerely,

JEANNE M. WELCH, Deputy State
Historic Preservation Officer

Sheila A. Stump, Historic
Preservation Specialist

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Enclosures

APPENDIX C

VISUAL MANAGEMENT SYSTEM 1/

1/ Copies of the publications "National Forest Landscape Management" Volumes 1 and 2, USDA Handbooks Numbers 434 and 462, are available for review at Forest Service offices.

VISUAL MANAGEMENT SYSTEM

The American people are concerned about the quality of their visual environment. Because of this concern, it has become appropriate to establish the "visual resource" as a basic resource, to be treated as an essential part of and receive equal consideration with the other basic resources of the land. At the same time, public demand has increased for goods and services produced on much of the same land. It has thus become necessary to both inventory the visual resource and provide measurable standards for its management.

The inventory of this resource contains two parts: Variety Class and Sensitivity Levels. Variety Class is a measure of the scenic quality of the land, and is categorized into three classes of importance: Distinctive (A), Common (B), and Minimal (C). It is based on two assumptions: Naturalness is important to many peoples' psychological welfare and all landscapes have some value, but those landscapes with the most variety or diversity have the greatest potential for high scenic value.

Sensitivity Levels are based only on the landscape seen by the traveling public and is a measure of their concern for scenic quality. Its differing levels of user concern are: Highest (1), Average (2), and Lowest (3). The assumption is that esthetic concern varies among National Forest users and that the visual impacts of a management activity become more important as the actual or potential numbers of viewers increase. A seen area categorized into a level of concern based on users concern and/or volumes of users is further divided into foreground, middle ground, and background to aid in evaluation.

The map overlays from these two separately completed inventory parts are combined to determine the desired Visual Quality Objective for the area (see matrix, page 43, Volume II, Chapter I, USDA Handbook 462). The higher the class of variety and user concern, the less contrast an activity may have with its surroundings. Each Quality Objective except PRESERVATION, then describes a different degree of acceptable alteration of the natural landscape based upon the importance of esthetics. The degree of alteration is measured in terms of visual contrast with the surrounding natural landscape.

The application of Quality Objectives are based on the following assumptions in addition to those already mentioned:

Unity or cohesiveness of the landscape has been shown by public response research to be important. PRESERVATION, RETENTION, and PARTIAL RETENTION accomplish this in varying degrees.

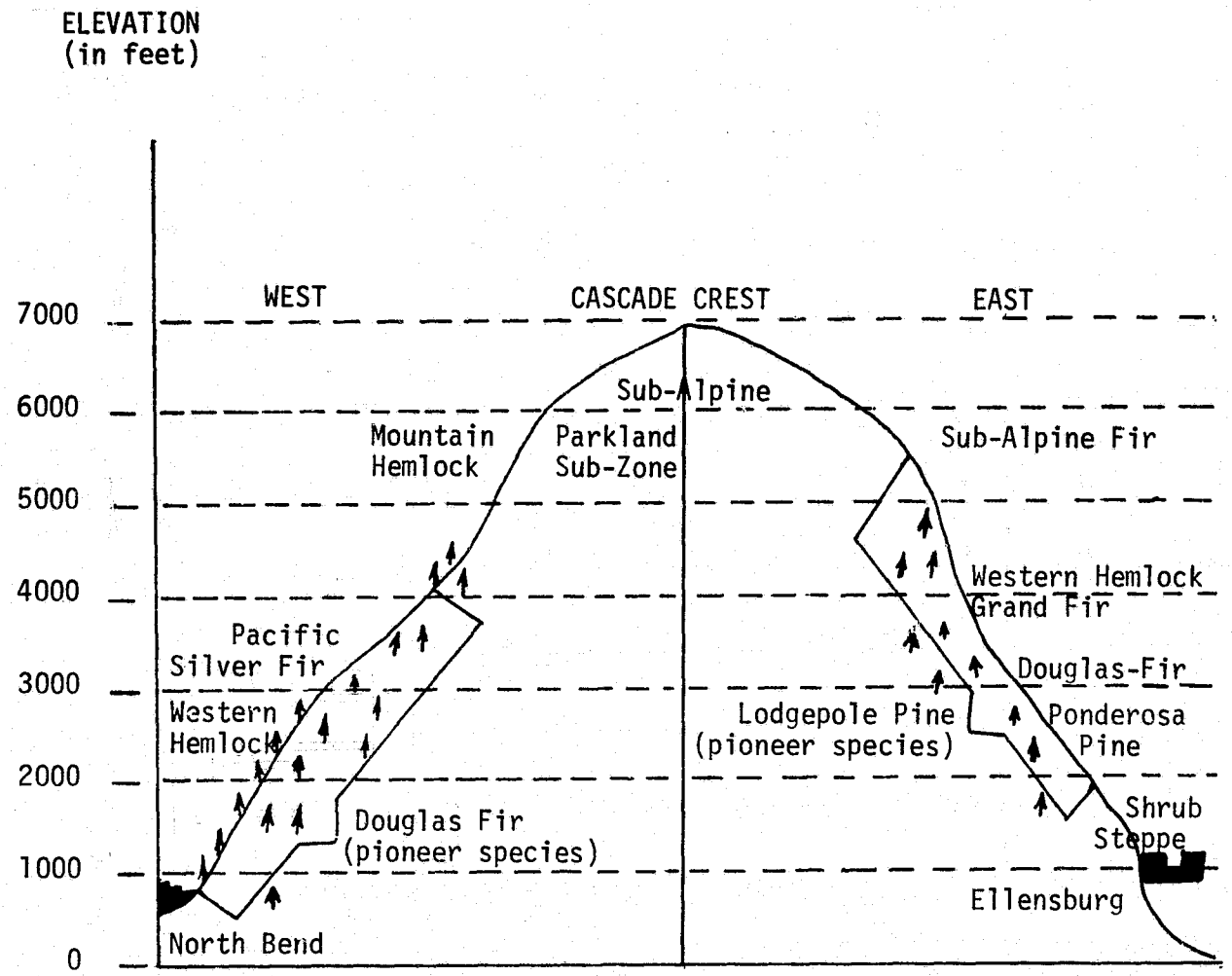
The more activities repeat natural appearing characteristics, the less contrast they will have with their natural surroundings; therefore, preserving unity or cohesiveness.

All National Forest lands can be seen from aircraft or high vista points, and therefore a minimum visual quality must be determined.

APPENDIX D

SCHEMATIC DIAGRAM OF THE VEGETATIVE LIFE ZONES OVER THE CREST OF THE CASCADES [1/]

1/ Adapted from the Naches-Tieton-White River Draft Environmental Statement. The descriptions of life zones was taken from the Pacific Northwest Forest and Range Experiment Station Report "Natural Vegetation of Oregon and Washington" by J. F. Franklin and C. T. Dyrness.



These zones may occur as sequential belts on mountain slopes, but more often they inter-finger, with each attaining its lower elevation limits in valleys and its highest levels on ridges. Also, disturbances and resulting seral (pioneer) vegetation may obscure Zonal sequences, especially Douglas-fir on the west side and lodgepole pine on the east side.

EAST OF CASCADE CREST

SUBALPINE FIR ZONE (*Abies lasiocarpa*)

The Subalpine Fir Zone is well represented on the high secondary ranges extending east from the Cascade Crest. Its lower limit is approximately 5,000 feet where it is bounded by forests in which either western hemlock, western redcedar, grand fir or Douglas-fir are climax.

It is the coolest and wettest of the forested east side zones. Cool summers, cold winters, and especially the development of deep winter snowpacks differentiates this zone from the others. The soils are podzolic with well developed but relatively thin mor humus layers. Soils are more acid than in the lower forested zones.

The forest tree species of the Subalpine Fir Zone are subalpine fir, the climax species; some Englemann spruce; lodgepole pine; Douglas-fir; grand fir; western larch; white pine (especially lower in the zone); and whitebark pine which is sometimes abundant higher in the Zone. Pacific-silver fir and mountain hemlock may be encountered as minor stand components.

There are five commonly recognized shrub types associated with subalpine fir. The subalpine whitebark pine association occurs in the open forest-subalpine parkland zone. The subalpine grouse huckleberry association is particularly common in drier locales. Occurring higher up in the zone in the wettest and coolest north slopes and ravines is the rusty leaf menziesia/subalpine fir association. Another association typical of upper south slopes and ridge tops is the subalpine fir/beargrass, big huckleberry community. The fifth association, subalpine fir/Oregon boxwood occurs usually in the lowest part of the subalpine zone. Common associates include queencup beadlily and beadstraw.

There is one community characteristic of the Subalpine Zone within the forest matrix that needs mentioning. Grassy parks or balds are frequently encountered on or near ridges, especially south facing slopes. They are more xeric than adjacent forest stands. Wind transfer of moisture (snow) from these balds and soil drought seem important in maintaining them as topographic climaxes.

WESTERN HEMLOCK ZONE (*Tsuga heterophylla*)

This climax zone is most common at elevations between 2,600 and 4,000 feet on the eastside, but is often very disjunct and intermixed with the Grand Fir Zone.

The most common associates are western hemlock, western redcedar, grand fir, subalpine fir or mountain hemlock and Douglas-fir. The western hemlock associations occur on somewhat wetter sites than the climax western redcedar types. The understory is mostly Oregon boxwood, devil's club, western coolwort, big huckleberry, queencup beadlily and oak fern.

GRAND FIR ZONE (*Abies grandis*)

This zone is typically bounded by subalpine fir at its upper limits and Douglas-fir or ponderosa pine at its lower limits. However, as is the case on the eastside, at higher elevations and on more mesic sites, it may abut forests in which pacific-silver fir, western hemlock, western redcedar, and mountain hemlock are climax.

This zone has the most moderate environmental climate of any of the eastside forest zones (except for areas where western hemlock and western redcedar are present). Neither moisture nor temperature conditions are extreme. Drought is of minor ecologic significance in the Grand Fir Zone. Soils are generally deep due to accumulations of volcanic ash. The dominant soil processes are podzolic. Mull-type layers are usually moderately acid.

Associated with these are such shrub and herbaceous species as Oregon boxwood, big huckleberry, baldhip rose, prickly currant, brome, sweet-scented bedstraw, twinflower, starry solomon plume, etc. Another association is grand fir, Douglas-fir, ponderosa pine with pine grass, western needle grass, stiff sage brush, bitterbrush, and spreading phlox.

A special type needing mention is the mountain meadow community, though found in many of the other zones on the eastside it occurs most commonly in the Grand Fir Zone. They are conspicuous, essentially permanent, herbaceous communities typically found on relatively gentle topography along and near the heads of stream courses. Many of these meadows have been overgrazed by domestic livestock and have deteriorated into other kinds of communities.

LODGEPOLE PINE (*Pinus contorta*)

Pure or nearly pure stands of lodgepole pine are widely distributed throughout the eastside. The majority are seral (or pioneer) having developed after fire or logging. Lodgepole pine has unusually wide ecologic amplitude - thriving on wet, poorly drained sites, as well as coarse textured, droughty soils. After fires, prolific seed ing allows it to quickly invade and establish dominance especially on more extreme sites where competitors are absent.

Lodgepole pine appears to be a climax in two types of situations: Poorly drained soils and in enclosed depressions forming frost pockets.

DOUGLAS-FIR ZONE (*Pseudotsuga menziesii*)

The Douglas-fir Zone has a typical elevation range of 2,000 - 4,300 feet. This zone is more mesic and consequently soil moisture conditions are more favorable than in the Ponderosa Pine Zone.

Major tree species include Douglas-fir (which is usually the climax species), ponderosa pine, lodgepole pine, and western larch. Trembling aspen is a minor associate in moist sites. Any of the three associated species may form pure or nearly pure stands following fires, since they are better adapted to fire.

Two understory associations seem to occur: Probably the most common being pinegrass with almost no shrubs. Associated with it is northwestern and elk sedge, broadleaf arnica, and occasionally kinnikinnik. The other association includes snowberry, shinyleaf spirea and woods and nootka rose.

PONDEROSA PINE ZONE (*Pinus ponderosa*)

The Ponderosa Pine Zone occurs approximately between 2,000 - 4,000 feet. Above this zone, ponderosa pine grades into Douglas-fir and grand fir, while at lower elevations it gives way to either grasslands or sagebrush steppe.

The climate of the Ponderosa Pine Zone is characterized by a short growing season with minimal summer precipitation. Most of the yearly precipitation falls as snow. Ponderosa pine occupies drier sites than any other forest type except western juniper.

Associated species with ponderosa pine include trembling aspen, lodgepole pine, and some Douglas-fir. Other tree species that may occur occasionally are grand fir, white pine, and western larch. The character of the understory tends to vary with locale but some common associations are: Idaho fescue, bitterbrush, common snowberry, mallow ninebark, bluebunch wheat grass, needle and thread, shiny leaf spirea, woods and nootka rose.

Fire control activities during the last 60-70 years have resulted in the gradual replacement of ponderosa pine by such species as grand fir and Douglas-fir on more moist sites. Natural fires used to eradicate these species, while the heavy barked ponderosa pine survived.

SHRUB STEPPE COMMUNITIES

Only the extreme eastern edge of the Unit could be classified as a shrub steppe community. It lies within the driest portion of Franklin and Dyrness' Columbia Basin Province. Climatically, it is arid to semi-arid with low precipitation, warm to hot, dry summers, and relatively cold winters.

The vegetational climax is the big sagebrush and bluebunch wheat grass community. Four layers are found in this association.

1. A shrub layer composed principally of the two mentioned species plus small amounts of such shrubs as tall green and gray rabbit brush, threetip sagebrush and spring hopsage.

2. A layer of perennial grasses dominated by needle and thread, thurber needle grass, and cusick bluegrass.

3. A layer of plants within four inches of the soil including such plants as sandbergs bluegrass, cheatgrass brome, and western stickweed.

4. A surface crust of lichens and mosses.

Successional changes in the big sagebrush/wheatgrass zone are most often associated with grazing, fire, or cultivation. Grazing most seriously affects the larger perennial grasses since they are preferred and are not adapted to withstand grazing. Heavy grazing tends, therefore, to eliminate bluebunch wheat grass, Idaho fescue, cusicks bluegrass, etc., and to increase annual grasses, particulary cheatgrass brome. Cusicks bluegrass is preferred by horses, cattle, and sheep, with sagebrush as a second choice. The smaller perennial sandbergs bluegrass is generally not significantly affected, particularly by sheep grazing, and sagebrush suffers mechanical damage only by cattle. Cheatgrass brome will apparently relinquish ground only very slowly once grazing pressure is lifted. Fire seriously affects only one dominant, big sagebrush. It is often completely killed by range fires, and although the remaining dominants can regenerate from subterranean organs, sagebrush must reoccupy the site by invasion and gradual expansion, a relatively slow process. A combination of both burning and overgrazing can result in development of an annual rangeland dominanted by cheatgrass brome in which tall gray rabbitbrush may be the only significant shrub. Cropped and abandoned fields will also develop a community dominated by cheatgrass brome but the tumbleweeds and Russian thistle may dominate the old field for a year or two while the cheatgrass population builds up.

APPENDIX E

WATERSHED

FOREST SERVICE REGION SIX STREAMSIDE MANAGEMENT UNITS

Stream Class - The present and foreseeable uses made of the water, and the potential effects of on-site changes on downstream uses, are the criteria for defining four stream classes. The importance of use will be relative to the general area. Consequently, size is not necessarily a criterion for classification. Whole streams or parts of streams can be classified. One stream may be sectionalized into several classes.

Class I - Perennial or intermittent streams or segments thereof that have one or more of the following characteristics:

Direct source of water for domestic use (cities, recreation sites, etc.).

Used by large numbers of fish for spawning, rearing, or migration.

Flow enough water to have a major influence on water quality of a Class I stream.

Class II - Perennial or intermittent streams or segments thereof that have one or both of the following characteristics:

Used by moderate though significant numbers of fish for spawning, rearing, or migration.

Flow enough water to have only a moderate and not clearly identifiable influence on downstream quality of a Class I stream, or have a major influence on a Class II stream.

Class III - All other perennial streams or segments thereof not meeting higher class criteria.

Class IV - All other intermittent streams or segments thereof not meeting higher class criteria.

Management Goals - Management activities within the SMU will be designed to meet goals established for each class of stream. The broad management goal for all streams is to meet water quality standards, and to protect the stream and its adjacent environment so as to maintain fish, and other aquatic resources at high natural levels. Specific management goals, as itemized below, recognize that some water quality changes may inevitably occur for certain classes of streams in order to obtain the best overall yield and mix of the many land and water resources. Resource planning shall be aimed at minimizing such changes, in accordance with Forest Service environmental protection responsibilities.

Class I - The use of the water and downstream influence of this class of stream, justify the highest level of protection and enhancement. Management activities will not degrade water quality, fish, or aquatic resources below the existing or natural level, except for temporary changes resulting from:

Activities designed to improve the stream; e.g., restoration and habitat improvement.

Necessary transportation system crossing; e.g., bridges, culverts.

Structures associated with putting the water to beneficial uses; e.g., irrigation diversions, domestic supply intakes.

Temporary changes are those which are transitory in nature; i.e., the effect ceases and water quality returns to its previous level when the permitted activity ceases. In any event, changes as a result of these activities must be minimal and adequately monitored.

Class II - The use of the water and downstream influence of these streams justify a high level of protection and enhancement. Management activities will not deteriorate water quality below State and Federal water quality standards, except for temporary changes as provided for in the standards, resulting from essential short-term activities.

Temporary changes include those defined for Class I streams but shall not include:

Increased water temperatures which take a minimum of several years for shade re-establishment, or

Turbidity from long-term disturbances such as roads or large denuded areas that act as a recurring source of sediment for a period of time until stabilization is achieved.

Class III - The minor on-site use and downstream influence of such streams justifies a normal level of protection. Management activities will not deteriorate water quality below existing State and Federal water quality standards except for changes resulting from short term activities as provided for in the standards.

Class IV - The minor on-site use and downstream influence justifies a normal level of protection. Management activities will not deteriorate water quality below existing State and Federal water quality standards except for changes resulting from short-term activities as provided for in the standards.

Changes in Class III and IV streams may involve some temperature and turbidity increases, provided these do not cause Class I or II waters to fall below standards. Temperature effects will usually diminish when shade is re-established, and turbidity will subside when erosion control measures become effective.

SUMMARY OF WATER QUALITY CRITERIA

Washington State surface waters are currently classified by a system which identifies present and potential uses and attaches specific water quality criteria to protect those uses. The state has five use classes: Class AA waters, Class A waters, Class B waters, Class C waters, and Lake Class waters. Class AA waters include uses that demand very high water quality. At the opposite extreme are Class C waters with uses that require a water of lesser quality.

Class Designation	Typical Uses	Dissolved Oxygen (mg/l) [1]	Temperature °Celcius [2]	Total Dissolved Gas (% of Saturation) [2]	pH	Turbidity (NTU) [3]	Total Coliform (median values) (organisms/100ml) [2]
CLASS AA							
Exceeds requirements for substantially all uses.	Potable Water supply; fishing; swimming; fish and shellfish reproduction and rearing						
Fresh Water		9.5	16	110	6.5-8.5	5	50
Marine Water		7.0	13	110	7.0-8.5 (Var. 0.10)	5	70
CLASS A							
Meets or exceeds requirements for substantially all uses.	Potable Water supply; fishing; swimming; fish and shellfish reproduction and rearing.						
Fresh Water		8.0	18	110	6.5-8.5	5	100
Marine Water		6.0	16	110	7.0-8.5 (Var. 0.50)	5	14
CLASS B							
Meets or exceeds requirements for most uses.	Industrial and agricultural water supply; fishing; shellfish reproduction and rearing.						
Fresh Water		6.5	21	110	6.5-8.5	10	200
Marine Water		5.0	19	110	7.0-8.5 (Var. 0.5)	10	100
CLASS C							
Meets or exceeds requirements of selected and essential uses.	Cooling water; fish passage; commerce and navigation.						
Fresh Water		5.0	24	110	6.5-9.0	10	400
Marine Water		4.0	22	110	6.5-9.0 (Var. 0.5)	10	200
LAKE CLASS							
Meets or exceeds requirements for all uses.	Potable Water supply; fishing; swimming; fish and shellfish reproduction and rearing.	[4]	[4]	110	[4]	5	50

[1] Shall exceed the values shown.
[2] Shall not exceed the values shown.
[3] Shall not exceed the values shown beyond naturally occurring conditions.
[4] No measurable change from natural conditions.

APPENDIX F

WILDLIFE, FISH AND THREATENED AND ENDANGERED WILDLIFE AND PLANT SPECIES

FOREST SERVICE REGION SIX FISH HABITAT MANAGEMENT POLICY

Fish Habitat Protection and Restoration

GOAL: Prevent deterioration of in-stream and riparian physical conditions which provide for food production, cover, and reproduction of fish and other aquatic organisms.

GOAL: Meet State and Federal water quality standards.

GOAL: Improve, where practical, in-stream and riparian physical conditions which affect habitat of fish and other aquatic organisms.

Timber Harvest and Road Construction

GOAL: Prevent massive soil failures associated with timber harvest and roads which adversely affect water quality and fish habitat.

GOAL: Eliminate deficiencies in road construction, maintenance, and timber harvest which, in aggregate, constitute unacceptable damage to water quality and the aquatic habitat.

GOAL: Where practical, improve physical conditions which, as a result of timber harvest or road construction, have affected fish and other aquatic organisms adversely.

FISHERIES OF THE PRINCIPAL STREAMS AND LAKES ON KITTITAS PLANNING UNIT

Water	Fisheries Situation	Remarks
Streams:		
Yakima River (Main Stem)	Put and take rainbow trout, native cutthroat, Dolly Varden, mountain whitefish and rainbow trout, introduced eastern brook and anadromous fish including spring chinook and silver salmon, and steelhead trout.	See also fish sampling sheet and narrative from Bumping Lake EIS. Needs some treatment for control of nongame fish and establishment of a minimum flow.
Taneum Creek	A potential steelhead stream, with existing populations of cutthroat, eastern brook and rainbow trout.	Needs fish passage facility at I-90 irrigation diversion. Rainbow planted annually on L.T. Murray portion.
Manastash Creek	Native cutthroat trout, rainbow and introduced eastern brook.	Road access to main stem.
Big Creek	Native cutthroat, nearly to the headwaters.	Lightly fished.
Cabin Creek	Section below Cole Creek is anadromous and rainbow, otherwise native cutthroat.	Road access to main stem.
Naneum Creek	Native cutthroat trout to Naneum Meadow vicinity.	Road and trail access to main stem.
Little Creek	Native cutthroat.	Small fish.
Lakes:		
Manastash	Eastern brook.	Spawning area available, so no restocking is needed.
Lost	Cutthroat trout.	Spawning area available, so no restocking required.
Stirrup	Eastern brook and some rainbow.	Spawning area available, so no restocking required.
Taneum	Cutthroat trout.	No spawning area--- must plant 1,000 fry biennially to maintain.

Table 2 - Continued

Water	Fisheries Situation	Remarks
Lakes:		
Shoestring	Cutthroat trout.	Spawning available, but cannot provide many limits.
Quartz Mountain Pond (SE¼ of Sec. 3)	Cutthroat trout.	Cannot provide many limits.

VERTEBRATES OF THE KITTITAS PLANNING UNIT

Some of the listed species only occur incidentally on the Unit, whereas others may be totally dependent on habitat within the Unit.

FISH, CHAR, ETC.

	Life Form		Life Form
Pacific Lamprey	1	Tui Chub	1
Western Brook Lamprey	1	Bridgelip Sucker	1
*Coho Salmon (Food Fish)	1	Largescale Sucker	1
*Chinook Salmon (Food Fish)	1	Mountain Sucker	1
*Kokanee	1	*Blue Gill	1
*Cutthroat Trout	1	*Smallmouth Bass	1
*Rainbow Trout	1	*Largemouth Bass	1
*Steelhead Trout	1	Prickly Sculpin	1
*Brown Trout	1	Mottled Sculpin	1
*Brook Trout	1	Piute Sculpin	1
*Dolly Varden	1	Torrent Sculpin	1
*Mountain Whitefish	1	Redside Shiner	1
*Common Carp (Food Fish)	1	Northern Squawfish	1
Longnose Dace	1	Chiselmouth	1
Speckled Dace	1		
Leopard Dace	1		

AMPHIBIANS

	Life Form		Life Form
*Bullfrog	1	Cascade Frog	2
Rough-Skinned Newt	1	Spotted Frog	2
Northwestern Salamander	2	Western Toad	2
Long-toed Salamander	2	Great Basin Spadefoot Toad	2
Pacific Giant Salamander	2	Pacific Tree Frog	2
Tiger Salamander	2	Painted Turtle	3
Tailed Frog	2		

REPTILES

	Life Form		Life Form
Western Skink	3	Northern Alligator Lizard	5
Common Garter Snake	3	Racer	5
Side-blotched Lizard	4	Desert Striped Whipsnake	5
Western Fence Lizard	5	Western Garter Snake	5
Sagebrush Lizard	5	Western Rattlesnake	5
Short-horned Lizard	5	Rubber Boa	15

*Wildlife species regulated by the Washington Department of Game or food fish regulated by the Washington Department of Fisheries.

BIRDS

	Life Form		Life Form
California Gull	3	Savannah Sparrow	5
Black Tern	3	Grasshopper Sparrow	5
Spotted Sandpiper	3	Vesper Sparrow	5
Dipper	3	Lark Sparrow	5
Killdeer	3	Dark-eyed Junco	5
American Golden Plover	3	Horned Lark	5
Common Loon	3	Hermit Thrush	5
Eared Eastern Grebe	3	Veery	5
Western Grebe	3	Water Pipit	5
Pied-billed Grebe	3	Western Meadowlark	5
*Green-Winged Teal	3	*Blue Grouse	5
*Blue-Winged Teal	3	*Spruce Grouse	5
*American Wigeon	3	*Ruffed Grouse	5
*Northern Shoveler	3	*Sage Grouse	5
*Redhead	3	*California Quail	5
*Ring-necked Duck	3	*Ring-Necked Pheasant	5
*Canvasback	3	*Gray Partridge	5
Horned Grebe	3	*Turkey	5
*Lesser Scaup	3	Common Nighthawk	6
*Harlequin Duck	3	Townsend's Solitaire	6
*Ruddy Duck	3	Nashville Warbler	6
*American Coot	3	Lincoln's Sparrow	6
*Common Snipe	3	Wilson's Warbler	7
Longbilled Curlew	3	Red-Winged Blackbird	7
Common Yellowthroat	3	Brewer's Blackbird	7
*Canada Goose	3	Brown-headed Cowbird	7
*Mallard	3	Lazuli Bunting	7
*Gadwall	3	Northern Shrike	7
*Pintail	3	Loggerhead Shrike	7
Rock Dove	4	MacGillivray's Warbler	7
Barn Swallow	4	Brewer's Sparrow	7
Cliff Swallow	4	White-Crowned Sparrow	7
Common Raven	4	Swainson's Hawk	7
Canyon Wren	4	Fox Sparrow	7
Rock Wren	4	Song Sparrow	7
Gray-Crowned Rosy Finch	4	Common Redpoll	7
*Chukar	4	American Goldfinch	7
Prairie Falcon	4	Rufous-sided Towhee	7
American Peregrine Falcon	4	Sage Sparrow	7
Turkey Vulture	4	Chipping Sparrow	7
Ferruginous Hawk	4	Eastern Kingbird	7
Marsh Hawk	5	Willow Flycatcher	7
Snowy Owl	5	Sage Thrasher	7
Shorteared Owl	5	Calliope Humingbird	7

*Wildlife species regulated by the Washington Department of Game or food fish regulated by the Washington Department of Fisheries.

Birds (Cont.)

	Life Form
Black-billard Magpie	7
Dusky Flycatcher	8
Bohemian Waxwing	8
Yellow Warbler	8
Yellow Breasted Chat	8
House Finch	9
Cedar Waxwing	9
Western Flycatcher	10
Olive-sided Flycatcher	10
Golden-Crowned Kinglet	10
Clark's Nutcracker	10
Ruby-Crowned Kinglet	10
Western Tanager	10
Yellowrumped Warbler	10
Townsend's Warbler	10
Red Crossbill	10
White-winged Crossbill	10
Evening Grosbeak	11
Purple Finch	11
Cassin's Finch	11
Pine Grosbeak	11
Rufous Hummingbird	11
Western Kingbird	11
Hammond's Flycatcher	11
Western Wood Pewee	11
Gray Jay	11
Steller's Jay	11
Common Crow	11
Merlin	11
Goshawk	11
Long-eared Owl	11
Sharp-shinned Hawk	11
Coopers Hawk	11
*Band-Tailed Pigeon	11
*Mourning Dove	11
Solitary Vireo	11
Warbling Vireo	11
Pine Siskin	11
Varied Thrush	11
Black-headed Grosbeak	11
Great Blue Heron	12
Great Horned Owl	12
Great Gray Owl	12
Golden Eagle	12
Bald Eagle	12
Yellow-bellied Sapsucker	13
Pygmy Nuthatch	13
Red-breasted Nuthatch	13
White-breasted Nuthatch	13
Common Flicker	13
Pileated Woodpecker	13
Lewis' Woodpecker	13
Hairy Woodpecker	13
Downy Woodpecker	13
White-headed Woodpecker	13
Black-backed three-toed Woodpecker	13
Northern three-toed Woodpecker	13
Mountain Bluebird	14
Black-capped Chickadee	14
Chestnut-backed Chickadee	14
Brown Creeper	14
House Wren	14
House Sparrow	14
Vaux's Swift	14
Ash Throated Flycatcher	14
Tree Swallow	14
*Wood Duck	14
*Barrow's Goldeneye	14
*Common Merganser	14
Hooded Merganser	14
Starling	14
Violet-green Swallow	14
American Kestrel	14
Bewick's Wren	14
Western Bluebird	14
Barn Owl	14
Screech Owl	14
Flammulated Owl	14
Spotted Owl	14
Pygmy Owl	14
Saw-Whet Owl	14
Burrowing Owl	15
Bank Swallow	16

*Wildlife species regulated by the Washington Department of Game or food fish regulated by the Washington Department of Fisheries.

MAMMALS

	Life Form
*Yellowbelly Marmot	4
Hoary Marmot	4
*Bobcat	4
Bushytail Woodrat	4
*California Bighorn Sheep	4
Townsend's Big-eared Bat	4
Desert Pallid Bat	4
Western Pipistrelle	4
Big Freetail Bat	4
Pika	4
*Mountain Lion	4
Virginia Opossum	5
Whitetail Jackrabbit	5
*Snowshoe Hare	5
*Blacktail Jackrabbit	5
Wolverine	5
*Lynx	5
*Feral Cat	5
*Rocky Mountain Elk	5
*Mule Deer	5
Porcupine	6
Chickaree	10
Little Brown Bat	14
Yuma Myotis	14
Long-eared Myotis	14
Long-legged Myotis	14
Northern Flying Squirrel	14
California Myotis	14
Silver-Haired Bat	14
Big Brown Bat	14
*Racoon	14
*Marten	14
Fisher	14
Masked Shrew	15
Vagrant Shrew	15
Coast Mole	15
Shrew-Mole	15
Longtail Vole	15
Heather Vole	15
Boreal Redback Vole	15
Oregon Vole	15
Mountain Vole	15
Great Basin Pocket Mouse	15
House Mouse	15
Western Harvest Mouse	15
Deer Mouse	15
Grasshopper Mouse	15
Norway Rat	15
*Eastern Cottontail	15
*Nuttall's Cottontail	15
Pygmy Rabbit	15
Aplodontia	15
Townsend's Ground Squirrel	15
Cascade Golden-mantled Ground Squirrel	15
Least Chipmunk	15
Townsend's Chipmunk	15
Yellow Pine Chipmunk	15
*Shorttail Weasel	15
*Longtail Weasel	15
*Badger	15
Striped Skunk	15
Coyote	15
*Cascade Red Fox	15
*Black Bear	15
Richardson's Vole	16
*Muskrat	16
*Mink	16
*River Otter	16
*Beaver	16

*Wildlife species regulated by the Washington Department of Game or food fish regulated by the Washington Department of Fisheries.

DESCRIPTIONS OF VERTEBRATE LIFE FORMS OCCURRING ON THE KITTITAS PLANNING UNIT

Life Form Number	Reproduces	Feeds
1	In water	In water
2	In water	On ground, in bushes and/or trees
3	On ground around water	On ground, in bushes or in water
4	In cliffs, caves, rims, and/or talus	On ground or in air
5	On ground without specific water, cliff, rim or talus association	On ground
6	On ground	In bushes, trees or air
7	Nests in bushes	On ground, in water or air
8	Nests in bushes	In bushes, trees or air
9	Nests primarily in deciduous trees	In bushes and trees
10	Nests primarily in conifers	In bushes, trees or air
11	Nests in trees	On ground, in bushes, trees or air
12	Nests on very thick branches	On ground or in water
13	Excavates own hole in a tree	In trees, brush or air
14	Nests in a hole made by another species or naturally occurring	On ground, in water or air
15	Underground burrow	On or underground
16	Underground burrow in water	In water or air

FOREST SERVICE REGION SIX DEAD TREE (SNAG) MANAGEMENT POLICY

1. Habitat needs for snag and cavity dependent wildlife will be provided on a majority of commercial forest land on each National Forest. Dead trees, both standing and down, will be provided in sufficient numbers to maintain primary cavity excavators in excess of 40% of their potential population capacity on commercial forest lands.

2. It is not intended or possible that snags be uniformly distributed over every acre. Neither is it intended that high concentrations of dead trees be combined with large areas void of dead trees to arrive at a prescribed average number of snags per acre. Actual snag distribution will be determined through coordination with other functional needs for fire management, safety, timber production, and logging operations.

3. Cavity nesters are not evenly distributed over all forest lands. Certain plant communities or habitats within plant communities such as areas adjacent to water or natural openings in the forest canopy are preferred. Emphasis should be given to these key habitats when coordinating development of Forest wildlife snag management programs.

Each Forest Supervisor will develop and implement management direction to meet these requirements. Technical details for developing and implementing the provisions of this policy are found in Dead Tree ("Snag") Requirements for Dependent Wildlife Species in the Blue Mountains of Washington and Oregon which is a chapter in "Wildlife Habitat Relationships for the Blue Mountains of Washington and Oregon."

Wildlife species in Region 6 that are totally or heavily dependent on dead and defective trees:

BIRDS

Red-breasted nuthatch
White-breasted nuthatch
Pygmy nuthatch
Black-backed three-toed woodpecker
Northern three-toed woodpecker
White-headed woodpecker
Hairy woodpecker
Downy woodpecker
Williamson's sapsucker
Yellow-bellied sapsucker
Pileated woodpecker

Lewis' woodpecker
Common flicker
Wood duck
Common goldeneye duck
Barrow's goldeneye duck
Bufflehead duck
Harlequin duck
Hooded merganser
Spotted owl
Saw-whet owl
Screech owl
Pygmy owl
Flammulated owl
Sparrow hawk
Bald eagle
Golden eagle

BIRDS (Con't)

American osprey
Peregrine falcon
Pigeon hawk
Red-tailed hawk
Rough-legged hawk
Swainson's hawk
Ferruginous hawk
Tree swalow
Purple martin
Western bluebird
Mountain bluebird
Ash-throated flycatcher
Black-capped chickadee
Mountain chickadee
Chestnut-backed chickadee

MAMMALS

California bat
Little brown bat
Big brown bat
Marten
Fisher
Bushy-tailed woodrat
Chickaree

Western gray squirrel
Northern flying squirrel
Red tree mouse

NOTE: Most, if not all, of these species occur on the Kittitas Planning Unit.

Table 1 Hard snag requirements for woodpeckers in the ponderosa pine type(s) and mixed conifer type(s)

Species and Groups	Average Snag Height in feet	Minimum Snag Diameter (inches)	Percent of potential maximum population													
			100			80			60			40			20		
			Snags/ sq. mi.	Snags/ 100 acres	Pairs/ sq. mi.	Snags/ sq. mi.	Snags/ 100 acres	Pairs/ sq. mi.	Snags/ sq. mi.	Snags/ 100 acres	Pairs/ sq. mi.	Snags/ sq. mi.	Snags/ 100 acres	Pairs/ sq. mi.	Snags/ sq. mi.	Snags/ 100 acres	Pairs/ sq. mi.
Hairy woodpecker	26±8	≥ 6	3,840	600	80	3,072	480	64	2,304	360	48	1,536	240	32	768	120	16
White-headed woodpecker	9±6	≥ 10	2,064	323	43	1,651	258	34	1,238	194	26	826	129	17	413	65	9
Williamson's sapsucker	36±8		4,368	683	91	3,494	546	73	2,621	410	55	1,747	273	36	874	137	18
Yellow-bellied sapsucker	31±6		4,368	683	91	3,494	546	73	2,621	410	55	1,747	273	36	874	137	18
Common flicker	23±6	≥ 12	768	120	16	614	96	13	461	72	10	307	48	6	154	24	3
Pileated woodpecker	44±12	≥ 20	288	45	6	230	36	5	173	27	4	115	18	2	58	9	1

Table 2 Hard snag requirements for woodpeckers in the lodgepole pine and subalpine fir type(s)

Species and Groups	Average Snag Height in feet	Minimum Snag Diameter (inches)	Percent of potential maximum population													
			100			80			60			40			20		
			Snags/ sq. mi.	Snags/ 100 acres	Pairs/ sq. mi.	Snags/ sq. mi.	Snags/ 100 acres	Pairs/ sq. mi.	Snags/ sq. mi.	Snags/ 100 acres	Pairs/ sq. mi.	Snags/ sq. mi.	Snags/ 100 acres	Pairs/ sq. mi.	Snags/ sq. mi.	Snags/ 100 acres	Pairs/ sq. mi.
Hairy woodpecker	26±8	≥ 10	3,840	600	80	3,072	480	64	2,304	360	48	1,536	240	32	768	120	16
Northern three-toed woodpecker	17±6	≥ 12	288	45	6	230	36	5	173	27	4	115	18	2	58	9	1
Black-backed three-toed woodpecker	9±6		288	45	6	230	36	5	173	27	4	115	18	2	58	9	1

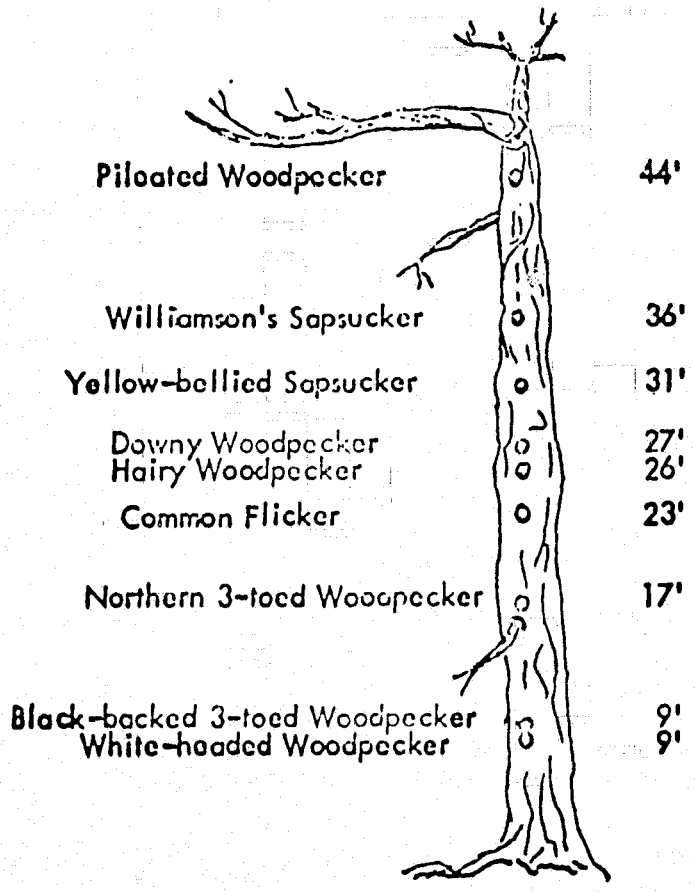


Figure 1. Average height of nest hole. These figures are averages of 217 mentions in the literature of heights of nest holes.

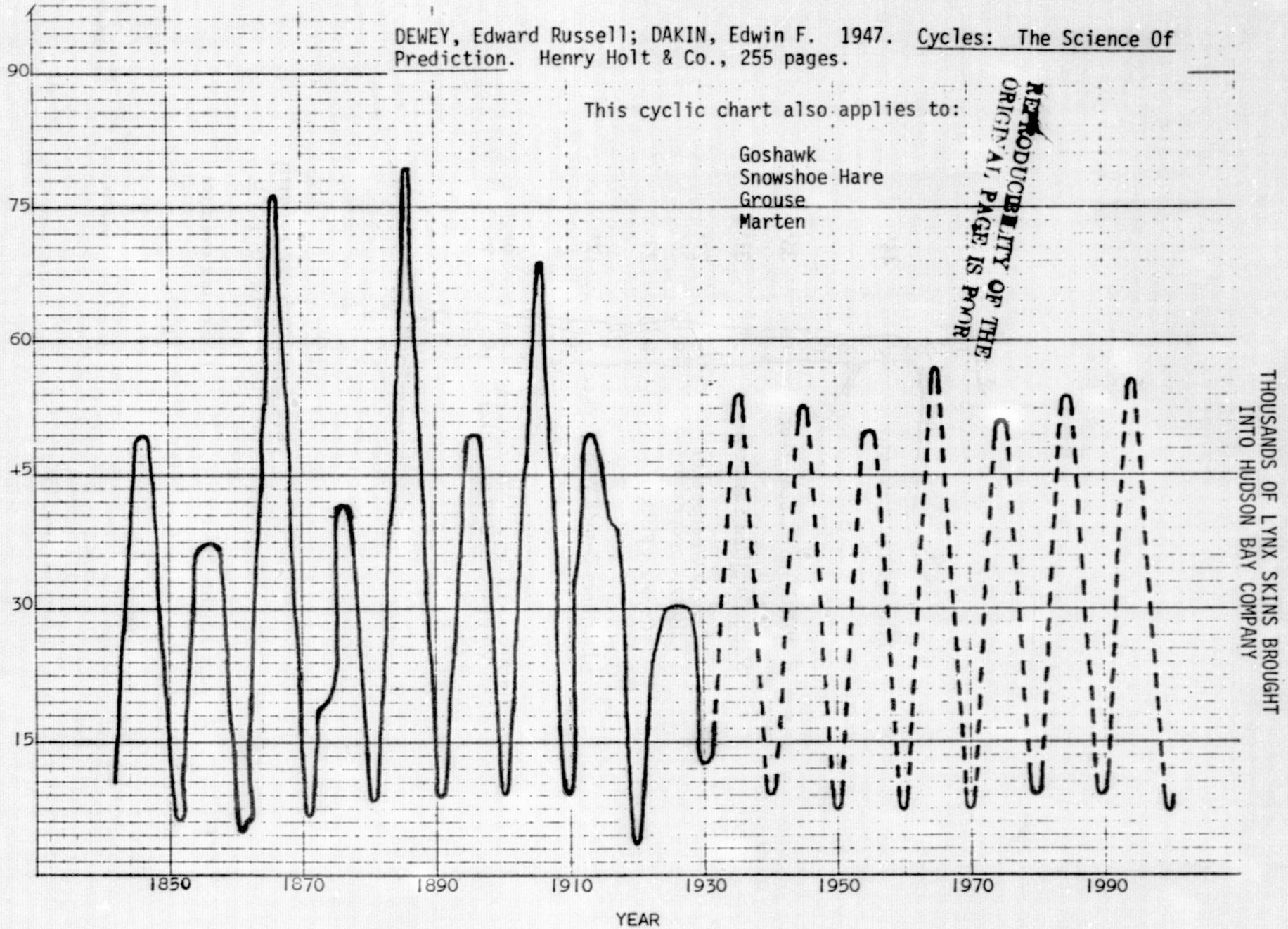


FIG. 5. Actual and projected phases of the 9 2/3 years cycle, according to Dewey and Dakin (1947).

WILDLIFE INDICATOR SPECIES FOR THE WENATCHEE NATIONAL FOREST

Species	Major Habitat	Type of Monitoring
Trout (Cutthroat and other residents)	**Aquatic areas.**	Creel census.
Elk	Mixed conifer stands with grass-forb openings and available water. Hiding and thermal cover essential.	Number harvested; number/square mile.
Deer	Mixed conifer stands with available browse and water. Escape and thermal cover essential.	Number harvested; number/square mile.
Bobcat 1/	Rocky,brushy areas adjacent to available habitat for prey species. Capable of persisting under a wide spectrum of habitat conditions. Escape cover essential.	Number of pelts taken.
Woodpeckers (Hairy, Downy, Three-toes, Flicker)	Mixed conifer stands with soft snags, well dispersed.	Number of snags per 100 acres.
Pileated Woodpecker	Old growth timber stands with standing dead and down material, well dispersed.	Number of snags per 100 acres.
Songbirds (Townsend's Solitary, Cedar Waxwing, Mountain Bluebird, Hermit Thrush, Evening Grosbeak)	Mixed conifer stands, all elevations, riparian zones. Diversified habitat.	Amount of edge effect including hardwood cover.
Goshawk	Dense old growth, multiple-canopy conifer stands near water.	Known active nests and cyclic chart.
Grouse	Open pine stands with grass-forb undercover, riparian zones, and old growth conifers along ridge tops.	Number harvested and cyclic chart.
Spotted Owl	Old growth stands in mid and upper elevations. Manage for 5% growth.	Owl calling during breeding season in old growth habitats.
Marten	Old growth stands in upper elevations.	Cyclic chart. Acres of mature canopy cover of 30% or more.
Pika (Coney, Rock Rabbit)	Special Habitat. Natural talus slopes.	Acres of undisturbed talus.

In-depth requirements for habitat can be found within "Wildlife Habitat Relationships of Eastern Washington".

1/ Bobcat was chosen because of recent concern for its shrinking habitat and its value as a fur bearer. Habitat maintained for big game could also shelter the predators.

FEDERAL THREATENED AND ENDANGERED SPECIES-WILDLIFE

The following species may occasionally utilize land in or near the Planning Unit. There are no known habitat areas on the Planning Unit.

Endangered

Scientific Name	Common Name
Falco peregrinus	Peregrine falcon

Threatened

Scientific Name	Common Name
Haliaeetus leucocephalus	Bald eagle

PLANTS

The following potentially threatened or endangered species were identified as possibly occurring at lower elevation of the Kittitas Planning Unit. These species were identified from a list entitled, "A Working List of Rare Endangered, Threatened and Endemic Vascular Plant Taxa for Washington". This list includes species on the "Federal List" (Smithsonian Institution list of 1978 and the 1976 Federal Register updates). There are no known areas where these plants exist on the Planning Unit.

Scientific Name	Common Name
APICAE	Parsley family
Lomatium Suksdorfii	Day valley desert parsley
Tauschia hooveri	No common name
ASTERACAE	Aster family
Erigon basalticus	Basalt daisy
FABACAE	Pea family
Astragalus misellus var pauper	Pauper milkvetch

APPENDIX G

GLOSSARY

APPENDIX G

GLOSSARY

Acre Foot - A unit for measuring a volume of water. The quantity of water required to cover one acre of land to a depth of one foot; 325,872 gallons.

Amenity Values - An expression of intangible aspects of pleasantness or desirableness commonly associated with recreation, scenic and wildlife related experiences.

Anadromous Fish - Species which migrate up rivers and streams to the place of birth to spawn; e.g., salmon and steelhead trout.

Animal Unit Month (AUM) - An animal unit consists of one thousand pounds of live weight of a cow and a calf. An animal-unit-month, abbreviated AUM, is the quantity of forage consumed by a cow and her calf in one month.

Associated Species - Commercial species of timber usually growing in the same stand such as grand fir or hemlock with Douglas-fir.

Biological Carrying Capacity - The number of animals that an area can sustain due to the condition of various habitat factors.

Board Foot - A volume of solid wood 12 inches by 12 inches by 1 inch thick. Lumber is sold by thousands of board feet. An average house with 1,400 square feet of floor space requires about 15,000 board feet of lumber and other wood products.

Carrying Capacity - The maximum resource use that can be sustained without degradation of any of the other resources.

Class I Stream - Perennial or intermittent streams or segments thereof that are direct sources of water for domestic use or are used by large numbers of fish for spawning, rearing or migration.

Class II Stream - Perennial or intermittent streams or segments thereof that are used by moderate though significant numbers of fish for spawning, rearing or migration or that has a moderate influence on a Class I stream.

Class III Stream - Other streams or segments that do not meet Class I or II stream standards, but on-site use and downstream influence justifies a normal level of protection.

Climax Vegetation or Species - The final species or combination of species in the evolution of plant life on a particular site. Climax species will perpetuate themselves until an external force such as fire, logging, insects, etc., disrupts the ecosystem. Hemlock and cedar are examples of climax timber species.

Commercial Forest Land (CFL) - Land that is producing or capable of producing marketable wood.

Commodity Production - Resource outputs in the form of tangible products including wood, water and forage.

Dead Tree (Snag) Management Policy - Forest Service, Region Six management criteria for the maintenance of dead or cull trees necessary for snag dependent wildlife species. Refer to Appendix G, Page G-9, for a more complete description.

Demand - The amount of goods or services that will be used if offered over a given range of prices at a particular point in time.

Developed Recreation - Concentrated public use on a developed site which is a relatively small, distinctly defined portion of the National Forest used for camping, picnicking, swimming, boat launching, etc.

Dispersed Recreation - Recreation use other than developed recreation including hiking, fishing, hunting, berry picking, etc.

Ecosystem - The interacting system of a biological community and its nonliving environment.

Encumberance - A lien, liability or charge upon a parcel of land.

Fish Habitat Management Policy -This policy statement sets forth Forest Service Region Six (Oregon and Washington) fish habitat management policy and goals to attain quality management. Refer to Appendix F, page F-1, for a more complete description.

Fuel Break- Strategically located strips of land, usually 100 to 500 feet wide, that have been altered by fuel modification so that fires burning into them can be more readily extinguished.

Hiding Cover - Vegetation capable of hiding 90 percent of an elk from view at a distance of 61 meters (200 feet) or less.

Implementation Plans - Detailed plans, such as a timber management plan or grazing allotment plan. The intensity of management and its location is determined by a land use allocation such as established by unit planning.

Intensive Timber Management - A form of management that attains the greatest wood growth potential by maintaining optimum tree spacing and age classes in timber stands.

Land Type - An area of land having a fairly specific combination of soil, vegetative and topographic features. Land types have definite boundaries that can be delineated on a map and located on the ground. Such units are identified by number in the Soil Resource Inventory.

Late Season Waterflows - Water that is delivered from a watershed after the normal runoff period.

Life Form - That form of wildlife or group of wildlife species that uses a certain broad habitat combination for reproduction and for feeding.

MBF - One thousand board feet; MMBF = one million board feet.

Non-Commercial Forest Land - Forest land that is incapable of producing crops of industrial wood on an economic basis.

Off-Road Vehicle (ORV) - A vehicle capable of cross-country travel or travel on low grade roads and trails; e.g., motor bikes, four-wheel drives, snowmobiles, etc., and including all terrain vehicles (ATV's).

Old Growth Habitat - A timbered area that includes overmature trees well past their optimum growth period and past rotation age and containing many dead or dying trees. This type of environment will provide habitat for the maximum number of snag and old growth dependent wildlife.

Optimum Biological Needs of Big Game - Habitat conditions offering the combination of forage and cover that supplies all the natural requirements of the animals. Its distribution is approximately 60 percent openings, 20 percent hiding and 20 percent thermal cover. It does not consider additional hiding cover that elk may prefer during hunting season and factors that may contribute to total hunter satisfaction.

Output - A measurable amount of production.

Potential Yield - The maximum potential annual harvest consistent with sustained yield, considering site capability, current logging technology and legal constraints on soil stability and water quality.

Resource Allocation - Designating certain parcels of land for the production of certain resources. These may be commodities, amenities or a combination of each.

Rotation (Age) - The period of years required to establish and grow timber crops to a specified level of maturity, normally 90 to 140 years, depending on the species and stand management.

Scribner Rule - A diagram rule for determining log volumes. It assumes one inch boards and 1/4 inch saw kerf, makes a liberal allowance for slabs and disregards taper.

Scribner Decimal C Rule - The Scribner rule modified by rounding off the last digit to the nearest 10 and dropping the cipher. The official log rule of the U.S. Forest Service.

Soil Resource Inventory (SRI) - An inventory of the soil resources of the Wenatchee National Forest. It provides basic soil, bedrock and landform information and interpretations for land managers. Copies are available for review at offices of the Wenatchee National Forest.

Streamside Management Units - The stream and an adjacent area of varying width where practices that might affect water quality, fish or other aquatic resources are modified, as necessary, to meet streamside management unit goals for each class of stream. The width of this area will vary with the management goals for each class of stream, characteristics of the stream, surrounding terrain and type and extent of the planned activity. Refer to the Appendix E for a more complete description.

Thermal Cover - A timbered condition providing protection for big game during temperature extremes. For elk this is primarily important on summer range and is provided by trees over 40 feet tall and with a closed canopy, but open beneath the tree crowns to permit air movement.

Threatened and Endangered Plant Species -

Threatened - Those plant species that are likely to become endangered within the foreseeable future, throughout, or in a significant portion of their range.

Endangered - Those plant species in danger of extinction throughout, or in a significant portion of, their range. Existence may be endangered because of the destruction, drastic modification, or severe curtailment of habitat, or because of over-exploitation, disease, predation or even unknown reasons.

Threatened and Endangered Wildlife Species - These species are protected by the Endangered Species Act of 1973.

Threatened - Species of wildlife that are so few in numbers, or so threatened by present circumstances, as to be in danger of extinction.

Endangered - A wildlife species whose prospects of survival and reproduction are in immediate jeopardy. An endangered species must have help or extinction will probably follow.

Timber Land Classification System - This system classifies the Forest land base as follows:

Non-Forest Land is land that has never supported forests or where timber use if precluded, lakes, reservoirs, rock, etc.

Unproductive Forest Land is land incapable of annually producing 20 cubic feet of wood fiber per acre.

Productive Forest Land includes areas suitable for timber management and capable of producing more than 20 cubic feet per acre per year. Productive forest land is further broken down into the following classifications:

Reserved Forest Land is land withdrawn from timber utilization by statute administrative regulation or by designation in approved land management plans. Reserved forest land includes Wilderness, Research Natural Areas, etc.

Deferred Forest Land is forest land that has been administratively identified for study as a possible addition to the Wilderness system or other withdrawal from timber use under authority granted in the code of Federal Regulation.

Commercial Forest Land is all other land producing or capable of producing a harvest of commercial timber.

Timber harvesting activities will occur only on the Forest acreages classified as commercial forest land. Commercial Forest Land (CFL) is further subdivided, based on multiple use objectives, into four harvest components.

1. Standard is the component where stands of commercial timber can be harvested with adequate protection of forest resources under the usual provisions of a timber sale contract.

2. The Special component includes acres which need special designed treatment of the timber resource because of landscape, water quality, or other environmental considerations.

3. Marginal is that component of the CFL not qualifying as Standard or Special because of excessive development costs, low product values, resource protection constraints, or combinations of the above. This is commercial forest land where it is not now feasible to manage timber stands but where it may be possible in the future.

4. Unregulated is the component not programed for timber yields under sustained yield-even flow principles. Unregulated acres include existing and potential recreation sites, areas under special use permit, etc.

TRI System - (Total Resource Information System) - An in-place data base for a National Forest. Its basic unit is the compartment. A compartment is an area containing one or several drainages whose boundaries are easily identified on a map and on the ground.

Transitory Range - Temporary range found in recently cut timber harvest or burned areas. For the first few years these areas produce varying amounts of grasses, forbs and browse species. As the young conifer trees grow, they shade these species out and the range gradually decreases in forage production.

Visitor Day - The presence of one person on National Forest land for a period of twelve hours.

Visual Absorption Capability (VAC) - (VAC) refers to a relative measure of a tract of land to withstand or accept management manipulations without affecting its visual character. Some of the general premises used in VAC are:

1. As slope increases, VAC decreases
2. As vegetative pattern and screening increases, VAC increases
3. As site recoverability increases, VAC increases
4. As soil color contrast becomes greater, VAC decreases.

Visual Resource Management System - A Forest Service system for managing the scenic qualities of the landscape. This is described in two volumes: National Forest Landscape Management Volume 1, U.S. Department of Agriculture Handbook, No. 434, and Volume 2, Handbook No. 462. These publications are available for review at most National Forest Ranger Stations and headquarters, or they may be obtained from the Superintendent of Documents, Washington, D.C.

APPENDIX H

RPA - RECOMMENDED PROGRAM DIRECTION

(This is a condensed summary of key primary outputs, inputs, costs, and personnel needs for fiscal years 1977-1980, and on an average annual basis for each following decade through the year 2020.)

	Recommended Program Range	System [1]	Unit of Measure	Index Year 1975	Outputs and Costs by Time Period							
					Annual				Average Annual [1]			
					1977	1978	1979	1980	1981-1990	1991-2000	2001-2010	2011-2020
Key Primary and Intermediate Outputs												
Recreation Use—Developed	High	R&W	Mil. RVD	72.8	76.3	73.3	79.9	81.0	88.1	97.4	108.1	122.4
	Low	R&W	Mil. RVD	—	73.3	73.5	73.8	74.8	79.7	84.6	90.2	100.1
Recreation Use—Dispersed	High	R&W	Mil. RVD	125.0	134.7	137.8	139.8	140.0	160.9	181.0	201.1	220.0
	Low	R&W	Mil. RVD	—	128.0	129.5	130.0	128.3	144.8	156.8	166.9	176.0
Wilderness—Maintained	High	R&W	Mil. Acres	12.0	15.2	15.2	15.2	15.2	23	25	30	30
	Low	R&W	Mil. Acres	—	15.2	15.2	15.2	15.2	21	23	25	25
Wildlife Habitat Improvement	High	W&F	Thous. Acres	175	500	667	834	1,040	1,455	1,850	2,297	2,744
	Low	W&F	Thous. Acres	—	475	627	776	957	1,310	1,609	1,906	2,195
Fish Habitat Improvement	High	W&F	Thous. Acres	4	13	15	18	21	35	50	61	72
	Low	W&F	Thous. Acres	—	12	14	17	19	32	44	51	58
Livestock Grazing—NFS	High	R	Mil. AUM's	11.3	11.4	12.9	14.6	16.3	18.9	20.4	20.4	20.4
	Low	R	Mil. AUM's	—	10.8	12.1	13.6	15.4 [4]	17.2	17.7	16.9	18.0
Livestock Grazing—S&PF	High	R	Mil. AUM's	59.1	60.1	61.5	63.0	67.5	89.0	132.7	132.7	132.7
	Low	R	Mil. AUM's	—	57.1	57.8	52.3	62.1	80.1	115.4	110.1	106.2
Potential Timber Yield—NFS	High	T	Bil. Cu. Ft.	2.7	2.75	2.88	2.91	3.02	3.26	3.53	3.82	4.07
	Low	T	Bil. Cu. Ft.	—	2.65	2.72	2.69	2.78	2.95	3.07	3.19	3.33
Timber Sale Offering—NFS [5]	High	T	Bil. Cu. Ft.	2.4	2.08	2.92	3.05	2.91	3.26	3.53	3.82	4.07
	Low	T	Bil. Cu. Ft.	—	2.08	2.76	2.83	2.69	2.95	3.07	3.19	3.33
Timber Util. Improv.—All Ownership	High	T	Pct. Increase	5	5.10	5.15	5.20	6.24	9.45	11.77	13.08	14.30
	Low	T	Pct. Increase	—	4.90	4.85	4.80	5.76	8.55	10.23	10.92	11.70
Potential Timber Yield—Non-industrial Private Lands	High	T	Bil. Cu. Ft.	7.5	7.7	8.5	8.8	9.15	11.45	13.70	15.91	17.49
	Low	T	Bil. Cu. Ft.	—	7.5	7.7	8.0	8.45	10.36	11.90	13.29	14.31
Water Quality (Min. Standards)	High	L&W	Thous. Ac. Ft.	1,373	1,402.5	1,419.3	1,436.2	1,440.4	1,512.	1,549.4	1,578.3	1,592.8
	Low	L&W	Thous. Ac. Ft.	—	1,347.5	1,336.7	1,325.8	1,329.6	1,368	1,346.6	1,317.7	1,433.5
Fire Prevention—NFS	High	L&W	No. Man-Caused Fires	6,990	6,834	6,592	6,344	6,240	6,195	6,313	6,322	6,270
	Low	L&W	No. Man-Caused Fires	—	6,566	6,209	5,856	5,760	5,605	5,487	5,278	5,130
Fire Suppression—S&PF	High	L&W	No. Per Mil. Ac. Prot.	216	231	219	223	222	220	224	227	228
	Low	L&W	No. Per Mil. Ac. Prot.	—	221	209	205	204	200	194	189	186
Lands Acquired and Exchanged	High	L&W	Thous. Acres	—	126.5	121.0	244.4	304.2	423.2	506.1	101.4	113.3
	Low	L&W	Thous. Acres	—	121.5	114.0	225.6	208.8	382.8	439.9	84.6	102.0

Transportation System—Roads (appropriated funds)	High	All	Miles Constr.-Reconstr.	—	746	1,431	2,297	2,777	4,410	5,255	5,600	5,723
	Low	All	Miles Constr.-Reconstr.	—	716	1,347	2,197	2,563	3,990	4,567	4,726	4,682
Transportation System—Roads (timber purchaser)	High	All	Miles Constr.-Reconstr.	—	9,801	9,003	8,188	7,338	7,411	7,928	10,777	10,885
	Low	All	Miles Constr.-Reconstr.	—	9,417	8,479	5,558	6,774	6,705	6,890	8,997	8,906
Youth Conservation Corps	High	H&CD	Thous. Persons Involved	10.0	0	39.0	39.0	39.0	39.0	39.0	39.0	39.0
	Low	H&CD	Thous. Persons Involved	—	0	39.0	39.0	37.0	37.0	36.2	35.4	35.1
Community Improvement	High	H&CD	Comm. Assisted	300	0	1,900	1,900	1,900	1,900	1,900	1,900	1,900
	Low	H&CD	Comm. Assisted	—	0	1,687	1,976	1,824	1,805	1,767	1,729	1,710
Receipts to Treasury	High	All	Mil. Dol.	581.3	535.6	609.3	689.4	765.4	844.7	967	1,102.4	1,225.2
	Low	All	Mil. Dol.	—	514.6	573.9	636.4	706.6	764.3	840.3	920.4	1,002.4
Inputs and Costs [2]												
Personnel Requirements	High	All	Thous. Person Years	—	45	50	54	58	55	56	62	66
	Low	All	Thous. Person Years	—	44	48	50	54	50	50	54	57
Operational Costs	High	All	Mil. Dol.	—	645.8	971.2	1,046.3	1,082.4	1,264.7	1,494.1	1,668.6	1,306.2
	Low	All	Mil. Dol.	—	—	914.6	965.9	999.2	1,144.3	1,298.6	1,393.0	1,477.3
Capital Investments	High	All	Mil. Dol.	—	383.7	592.1	665.8	721.0	777.3	984.6	1,126.6	1,210.2
	Low	All	Mil. Dol.	—	—	557.7	614.6	665.6	703.3	855.8	940.6	990.2
Backlog	High	All	Mil. Dol.	—	30.3	54.7	73.9	99.2	98.2	100.8	0	0
	Low	All	Mil. Dol.	—	—	51.5	68.2	91.6	88.8	87.6	0	0
Total Costs [4]	High	All	Mil. Dol.	1,003.8	1,059.8	1,616.5	1,784.4	1,902.7	2,140.3	2,579.6	2,795.2	3,015.6
	Low	All	Mil. Dol.	—	—	1,522.3	1,647.2	1,756.3	1,936.5	2,242.0	2,333.6	2,468.2
National Forest System Costs	High	All	Mil. Dol.	—	924.8	1,342.6	1,513.3	1,617.5	1,802.6	2,176.3	2,326.0	2,488.9
	Low	All	Mil. Dol.	—	—	1,264.4	1,396.9	1,493.1	1,630.9	1,891.5	1,941.8	2,036.3
Research Costs	High	All	Mil. Dol.	—	85.0	117.2	121.8	116.1	135.1	152.5	168.7	183.2
	Low	All	Mil. Dol.	—	—	110.4	112.4	107.1	122.3	132.5	140.9	149.8
State and Private Forestry Costs	High	All	Mil. Dol.	—	50.0	156.7	149.5	169.0	202.1	250.8	300.5	344.4
	Low	All	Mil. Dol.	—	—	147.5	138.0	156.0	182.9	218.0	250.9	281.8

[1] R&W—Recreation and Wilderness System; W&F—Wildlife and Fish System; R—Range System; T—Timber System, L&W—Land and Water System; H&CD—Human and Community Development

[2] Data may not add to totals because of rounding.

[3] Average annual outputs and inputs for the decade

[4] Total Costs do not include the following Program Budget items: Payments to Bureau of Employment Compensation; Coop. Work (Trust Fund), ASCS Expenses (Alloc.); O&C Grant Land (Alloc.); and Federal Highway Administration Trust (Alloc.)

[5] Conversion rate for N.F.S. Timber Sale offerings is 5 Bd. Ft. per cubic foot. The output Timber Sale offerings for '77 is 10.4 Bil. Bd. Ft.

APPENDIX I

MANAGEMENT CRITERIA

PACIFIC CREST NATIONAL SCENIC TRAIL

MANAGEMENT CRITERIA

Situation. The trail, as well as the adjoining land viewed from the trail will be, in effect, a strip of land of irregular width winding through a variety of landscapes. The irregular width of this strip of land will be a function of the nature of the travel route, and of the character of the terrain and vegetation.

Along the trail route will unfold a panorama of established and changing patterns of land use and management. This variety is part of the trail's total public appeal and attraction, and is clearly recognized in the Act.

In some locations, the trail will traverse public lands that have been established by legislation for very specific purposes. These include National Parks, a National Recreation Area, State Parks, elements of the National Wilderness Preservation System, and others. In these areas, management of the trail and lands adjoining it will meet the objectives for which the areas were originally and traditionally established or identified.

Where the trail crosses private lands, the landowners, States and counties will be encouraged to aid and cooperate in the protection of the nature and purposes of the trail.

The valuable watershed and timber resources along the trail are susceptible to damage from wildlife. These include the densely brush-covered hills of Southern California and the forested lands along portions of the trail. Some areas of extreme fire hazard in southern California are closed to public use intermittently during periods of high fire danger. This closure is intended to protect both the people and the watershed from the dangers and damages caused by fire.

Assumptions. To establish requirements for management of the trail and the lands influenced by the trail, the following premises are basic:

1. The Pacific Crest Trail, and the lands directly influenced by the trail, will be managed to provide its users opportunities for a wide variety of safe and pleasant outdoor experiences in an attractive environment. In the process, it will afford them opportunities to see and better understand the wide range of purposes which the lands serve and the uses to which they can appropriately be put, as well as the protection and management measures that make such uses of the land possible.

2. The existence of the trail in general will not dictate the management of the lands it traverses. Rather, the management of the trail will reflect the management of the adjoining land. Over most of the land, management practices are now in harmony with the purposes of the trail. Only in very exceptional cases will it be desirable to modify management of the land to insure adequate protection of environmental and scenic values along the trail.

Poor mining practices which are causing damage to the surrounding environment, heavy concentrations of slash and debris which could become a fire hazard when left close to the trail, and lack of erosion control measures are all examples of poor management practices which would need to be modified to protect the environment and scenic values along the trail.

3. Most owners of adjoining private lands will cooperate in modifying management of their lands in order to meet the objectives outlined in Item 2.

4. There will be general management requirements common to all lands crossed and directly influenced by the trail; however, some segments will require special management considerations. Loops and parallel trails for hiker and/or horse traffic, may need to be constructed.

Management Direction. The aim is to provide a continuous, high-quality trail for hikers and horsemen, including needed loops for hiker and/or horse travel, that offers a wide variety of opportunities for outdoor experiences, permits safe travel, and allows public access to enjoy this facility and its surrounding environment.

General Requirements. The following general requirements apply to the entire length of the trail:

1. Prohibit the use of motorized vehicles on the established trail by the public. The Secretary of Agriculture may authorize such use to meet emergencies, or to allow access to owners of adjacent land or to land users.

2. Protect the trail and trailside environment through use of zoning, cooperative agreement, rights-of-way, or scenic easements for sufficient width to cover the land directly influenced by the trail (defined as Travel Influence Zone or Foreground of Landscape Management Unit).

4. Manage all activities directly related to the trail to protect the qualities of air and water.

5. Protect or enhance scenic views by providing features such as openings to better display an attractive view, or vegetative screening to reduce objectional views.

6. Stress public safety more than public convenience without destroying the challenge of the outdoor experience.

7. Promptly dispose of all slash and debris which may create a fire or safety hazard or which does not harmonize with the purposes of the trail and the surrounding environment.

8. All stumps resulting from logging operations within the designated right-of-way for the trail will generally be cut to a height of 8 inches or less.

9. Establish refuse or garbage pickup points at areas where they can be serviced. Do not permit the establishment of garbage dumps along the trail.

10. Avoid damage to attractive natural land forms, vegetation, and ecosystem.

11. Minimize soil disturbance. In locations where man-made disturbance has occurred, including existing trail deterioration, backfill with earth or rock and stabilize with vegetation or provide other surface protection.

12. Identify areas of unstable soil and geology and avoid them or take appropriate or protective measures.

13. Require users of pack and saddle stock to control the animals, and, where appropriate for protecting watershed or vegetation, to carry feed rather than allow stock to graze native forage.

14. Prevent as far as possible damaging concentrations of livestock or use of the trail as a livestock driveway.

15. Prevent dangers to people, livestock, or wildlife from open mine shafts, open-pit mines, tunnels borrow-pits, or other hazards which might cause serious accidents.

16. Obtain or encourage cooperation to prevent adverse effects of mining activity.

17. Consider withdrawal of the travel influence zone of the trail from mineral entry where appropriate.

18. Prevent or lessen adverse effects from mineral lease activity by appropriate provisions in the lease.

19. Provide for public use of the trail through areas of high fire hazard. Assure safety through the use of construction and management techniques, the implementation of controls (such as prohibiting smoking), and the education of trail users as to the hazards of fire and its prevention. It may be necessary to close the trail to hikers and/or horses when extreme fire danger exists.

20. Where the trail is in proximity to features of historical or archaeological interest, make a thorough investigation and identify them so that they can be protected or removed prior to construction.

21. Identify, protect, and interpret unusual historical, archaeological, geological, botanical, or scenic features along the trail. Retain the historical information that predates the trail and tells of early exploratory and economic activity in the area, the people involved, and place names they gave, along with early efforts to establish the Pacific Crest Trail, including accounts of early segments of the trail.

    In addition, certain examples of management practices such as silvicultural work should be identified and interpreted to better acquaint the trail user with management objectives.

22. Use the distinctive Pacific Crest Trail route marker for identification of the trail. Where the need exists, install markers for the benefit of winter travelers.

23. Provide directional and informational signs in accordance with standards established by the Secretary of Agriculture.

24. When the trial crosses land dedicated to specific management by administrative decision or legislation, such as National Forest Wilderness or National Parks, and the prescribed management of these lands is more stringent in preserving esthetic values rather than following the general land management guides established for the trail as a whole, the more stringent management requirements will apply.

25. Install and maintain drainage structures on the trail, or take other appropriate measures to protect trail and watershed values.

26. Safeguard and assure, wherever possible, availability of potable water for users of the trail. Protect other water sources such as lakes and streams from becoming polluted from excessive use by men and stock.

27. Use graphic symbols to convey trail information to non-English speaking people using the trail.

28. Protect riparian vegetation, channel banks, and stream regimen, in the location and construction of the trail and related facilities.

29. Locate and construct the trail and related facilities to avoid, where possible, crossing meadows or developing a facility or use that might cause lowering of water tables in parks and meadows.

30. Locate and construct the trail and related facilities in such a manner as to avoid or minimize channel changes.

31. Where possible, avoid locating the trail and related facilities on established flood plains.

SPECIAL REQUIREMENTS. The following statements of requirements and situations are for certain special segments and zones along the trail, and will apply in addition to the general requirements:

National Park Segments

Situation. Congress has assigned the National Park Service a vital mission in the total conservation effort. This mission is to manage the outstanding natural, historical, and recreational resources of the National Park System for the continuing benefit and enjoyment of all the people.

Specific Requirements. In addition to the general requirements for the Pacific Crest Trail, the management direction given in the Administrative Policies for Natural Areas, Administrative Policies for Historic Areas, or Administrative Policies for Recreational Areas will apply. If there are conflicts between the general requirements and the National Park's administrative policies, the more stringent requirement or direction will apply in protecting environmental and scenic values.

National Forest Wilderness Segments

Situation. The Wilderness Act defines wilderness as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain."

Wilderness is characterized by extensive roadless, undeveloped areas, traversable only by trails or by cross-country travel, where visitors can find a degree of solitude difficult to find elsewhere.

Management direction is "to maintain an enduring system of high-quality Wilderness; perpetuate, and where necessary, restore those values dependent upon a wilderness environment; provide to the extent consistent with the above, opportunities for public use, enjoyment, and understanding of wilderness, and the unique experience dependent upon a Wilderness setting."

Specific Requirements. In addition to the general requirements for the Pacific Crest Trail, the requirements given in the Multiple Use Management Guides for each wilderness will apply. If conflicts between these requirements occur, that coordinating requirement which is more stringent will apply in protecting wilderness, environmental, and scenic values.

Bureau of Land Management Administered Segments

Situation. The Bureau of Land Management is charged with the administration of programs for conservation and development of the public lands and resources.

Special Requirements. In addition to the general requirements for the Pacific Crest Trail, the management direction given in BLM Manual 6221 - Primitive Areas, BLM Manual 6233 - National Landmarks and Registers, and BLM Manual 6231 - Antiquities, will apply. If there are conflicts

between the general requirements and the Bureau of Land Management's administrative policies, the more stringent requirements or direction will apply in protecting the environmental and scenic values.

California State Park System Segments

Situation. The State Park System units traversed by the Pacific Crest Trail are classified as State Parks. State Parks consist of relatively spacious areas of outstanding scenic or wilderness character, oftentimes containing significant historical, archaeological, ecological, geological, and other scientific values, preserved as nearly as possible in their original condition and providing opportunity for appropriate types of recreation where such will not destroy or impair the features and values to be preserved. Commercial exploitation of resources is prohibited.

Specific Requirements. In addition to the general requirments for the Pacific Crest Trail, the State Park regulations will apply. Among the most important of these are sections 4303, 4304, 4304.1, 4310, 4313, 4314, and 4350 of the California Administrative Code.

Travel Influence Zone (Foreground of Landscape Management Units)

Situation. Federal land adjacent to the trail, other than Wilderness of National Parks, will be managed as Travel Influence Zone or Foreground of Landscape Management Unit. Wherever possible, private landowners, whose lands are crossed by the trail, should be encouraged to manage their lands similarily.

This zone includes areas with significant or anticipated public recreational occupancy or use along existing and planned overland routes of travel, and areas in and around existing or planned recreational site developments. In these areas, beauty of the landscape and other esthetic values are an important part of the outdoor environment.

This zone is characterized by significant existing or anticipated occupancy and use for outdoor recreation and include areas immediately adjacent to, and surrounding, developed or planned sites where people may stroll. It comprises areas along existing or planned overland travel routes where the immediate scenic foreground is subject to close scrutiny. The zone is usually irregular in shape, depending on the nature and use of the travel routes, existing and planned occupancy and use, and the character of the terrain and vegetation.

Management direction is (1) to maintain or enhance natural beauty and other esthetic qualities and values; (2) plan, develop, and maintain recreational sites and facilites for intensive occupancy, use, and enjoyment by the public; and (3) develop and manage wildlife habitat, timber, range, soil and water resources, and various activities to enhance and maintain the outdoor recreational use and environment.

Specific Requirements. In addition to the general requirements for the Pacific Crest Trail, the coordinating requirements for Travel Influence Zones or Foreground of Landscape Management Units will apply and may be amplified by the addition of localized management units. The following requirements are typical and particularly significant:

1. Design plans for tree removal and cultural practices to meet recreational objectives. Trees may be removed when they are hazardous to the public; when necessary for recreational development; when stands are stocked in excess of long-term site capacities; and when removal will improve the health, vigor, and attractiveness of residual stand; or protect or enhance esthetic values.

2. Plant trees on suitable sites within 1 year after removal or after the area is burned, unless experience shows satisfactory natural regeneration can be assured within 3 to 5 years.

3. Protect or enhance esthetic values when developing and maintaining recreationally related land uses and transportation facilities.

4. Where possible, provide native vegetation for screening between developed recreational sites and the trail.

5. Permit work camps to be established only where they are fully compatible with the recreational environment.

6. Maintain or plant native vegetation to protect the natural attractiveness of the area.

7. Modify practices of livestock grazing to meet safety requirements for public recreation and travel. Fence if necessary for control.

8. Design, construct, and maintain fuelbreaks and firebreaks to be compatible with an esthetically pleasing environment.

9. Permit concessionaire recreational developments where desirable to complement public recreational facilities.

10. Permit borrow areas only where they are compatible with esthetic and recreational values.

FOREST SERVICE MANUAL
Portland, Oregon

INTERIM DIRECTIVE NO. 2 December 21, 1978

DURATION: One year from issuance date unless previously terminated or reissued.

CHAPTER: 2350 - FOREST DEVELOPMENT TRAILS

POSTING NOTICE: Last ID is No. 1 in FSM 2330.

This Interim Directive provides instruction for recreation management along the Pacific Crest National Scenic Trail and its environs in Oregon and Washington. It also provides a basis for development of a more comprehensive directive designed to supplement The Pacific Crest Trail, Guide for Location, Design and Management prior to expiration of this Interim Directive.

2353.04b - National Trail System

RECREATION MANAGEMENT GUIDE
PACIFIC CREST NATIONAL SCENIC TRAIL

Introduction

In 1971, The Pacific Crest Trail, Guide for Location, Design and Management was published by the Forest Service, containing instructions for planning, locating, designing, and managing the Pacific Crest National Scenic Trail and adjacent lands. The Guide was to be revised or modified as conditions change and as more information becomes available (Ref. R-6 Suppl. FSM 7723.2).

This directive provides administrators with additional guidance for managing the Trail as an outstanding linear recreation facility. It should be used in conjunction with the original Guide. Given page references refer to that Guide.

I. Purpose of Guide: The Pacific National Scenic Trail will span 2400 miles of terrain from Mexico to Canada. This supplement to the Guide provides uniform approach to the management and for facilities to be provided based upon specific objectives for each segment of the Trail.

Each Forest Supervisor and each agency head, where other jurisdictions are involved, is encouraged to develop a comprehensive management plan for their respective portions of trail. These guidelines are provided to National Forest managers to assist in preparation of such a plan. Other agency administrators are encouraged to perform similar analysis and planning.

II. Legislative Direction: The Pacific Crest National Scenic Trail is to be continuous from Mexico to Canada and, when completed, will be "so located as to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the area through which it passes," (Section 3, Public Law 90-543, October 2, 1968).

In Washington and Oregon, most trail sections have been located as of summer 1977. In California, the route is firm but detailed location work still remains for certain sections. This supplement to the Guide, therefore, deals primarily with the in-place management of the existing trail. Where specific location remains to be accomplished, placement can consider items in this I. D.

Location and management should be responsive to Section 7 of the Act as well as the proceeding referenced Section 3. Section 7 reads in part:

1. "In selecting the rights-of-way, full consideration shall be given to minimizing the adverse effects upon the adjacent landowner or user and his operation." This pertains to both public and private land.

2. "Development and management of each segment shall be done to harmonize with and complement any established multiple use plans for that specific area in order to insure continued maximum benefits from the land." This implies that management should be looked at in segments, and that each segment shall harmonize with and complement any established land use management. Specific segments are not to dictate management of areas through which they pass, but rather trail location and use is to fit into or complement existing management plans in order to insure continued maximum benefits from the land.

"Continued maximum benefits" is interpreted to mean that where land is producing a variety of benefits and products it should continue to do so. This does not preclude modification of these previous activities. The recreation opportunities to be offered will not reduce or eliminate these other outputs unless provided for in an approved land management plan.

III. Management Planning

A. Objectives: The purpose is to provide the manager the initiative in determining the most feasible and desirable experiences to be offered in a given situation in order to optimize benefits. Management planning will emphasize experience levels by segments as a management basis.

B. Classification by Segments: For purpose of consistency, a section is that portion of a trail across an administrative unit such as a National Forest. A section can contain one or more segments, each with an experience level management objective. The plan for each section should define the necessary trail segments. This guide offers experience level descriptions developed from existing Forest Service direction adapted specifically for the Pacific Crest National Scenic Trail.

In selecting the management objective, user preferences and needs are important considerations.

1. User Preferences: User preferences and needs will vary, ranging from persons travelling the total distance of the trail to the casual day user spending a portion of a day on the trail. This day visit can be a brief escape from the urban scene or a casual walk from an adjacent developed recreation site. By recognizing the types of use which may logically occur, the manager may select the appropriate management objective. Management complexity will vary from the least complex remote situations receiving light use by a few long distance travellers to those segments receiving a combination of long distance travellers and day users. The manager in these situations will be confronted with serving a much broader range of interests and needs. The summary below contrasts the two opposite ends of the spectrum and is offered to illustrate the variance in user characteristics:

	Day Users	Long Distance User
1.	Low commitment to this one trip - can substitute or repeat visit if necessary	High commitment to this one event - no chance to substitute or return.
2.	Usually a casual event, spontaneous, spur of the moment decisions.	Trip the result of long-range planning, inflexible to situation because of preplanning decisions. May be a club or organized event.
3.	PCNST is not critical to users experience.	PCNST use is critical to the users experience.
4.	Apt to accept visual discontinuity and other activities.	Less apt to accept visual discontinuity and other resource activities.
5.	Wide variety of social groups, some with little ecological understanding.	Mostly small groups - 2-3 persons - higher ecological understanding.
6.	Likely to have more specific knowledge of local area.	Less likely to have specific knowledge of local area.
7.	Often a novice hiker or equestrian with a minimal degree of outdoor skills.	More likely to be an experienced backpacker or equestrian with high degree of outdoor skills.

2. The Expected Mix of Users: Existing visitation figures indicate that use by backpackers exceeds equestrians by over 4 to 1. This will vary by segment. Estimates for visitor length of travel and relative proportions are given for the entire trail. Managers are encouraged to estimate the mix for each segment as a way of analyzing needs.

a. Total Distance Traveller - These are individuals traversing the trail from Mexico to Canada in one or more seasons. They will probably comprise less than 1% of the total use.

b. Long Distance Traveller - These are visitors spending two to three weeks or longer travelling long sections of the trail. These travellers will probably comprise 10-15% of the total use and may comprise 30-40% of the use on certain portions.

c. Short Distance Traveller - These are visitors spending several days travelling a section of the trail. These travellers will probably comprise 40-50% of the total trail use and as much as 50-60% locally.

d. Incidental User - These are visitors using a portion of the trail as part of a longer overnight trip. These travellers may comprise 20-30% of total trail use and up to 40-50% on short portions.

e. Day Use - These are persons using the trail for all or part of a day trip. These daytime visits may be a brief trip to escape the urban scene or may be a casual walk or ride within or from an existing recreation area or bisecting access road. This use will probably comprise 10-15% of the total use and may be over 50% of the use on certain portions that lie within existing recreation areas, near urban centers, or near major highway crossings.

3. Choosing the Desired Experience Level: In analyzing each trail segment, the following rationale (based on the Act) can be used in arriving at an appropriate management objective:

How can this segment of trail be managed to harmonize with existing land uses and activities while optimizing its recreational, scenic, historical, and cultural usefulness?

This requires an overall look at the trail as it relates to land classification, existing management plan objectives, existing and proposed uses, existing and proposed transportation system, public recreation needs and demands.

4. Experience Level Descriptions

Experience Level I - Trail segments with Level I as the primary objective will provide users with a primitive recreation experience. The user will enjoy maximum opportunity for solitude and testing outdoor skills. Feeling of regulation will be minimized to the greatest extent possible. Feeling of physical achievement will be an important part of the experience being offered. Environmental modification will be minimal with the trail itself the major evidence of man's influence. Places for camping will be available, but facilities for overnight camping, in most cases, will not be provided.

This is the wilderness experience level and will be the objective for management inside the boundaries of units of the National Wilderness Preservation System. Management of the trail will be subject to the management prescribed for each unit of wilderness. Since the approach to wilderness management is to minimize restraint and obvious regulation, rules for behavior and other needed information will be available to the user prior to entry.

Experience Level II - Trail segments in this category will have as their primary objective the provision of a near primitive wildland environment. Outside influences may be present but will be minimal. Opportunities for solitude and exercising outdoor skills will be present but not to the degree needed in wilderness. Campsites may be designated and provided with rudimentary improvements. These will be constructed using mostly native materials. Administrative motorized access may be available to points along the trail, but opportunities for public motorized access will not be provided.

This experience level fits well into areas to be managed as "back country" or roadless recreation. Campsites may be serviced by motorized equipment, but the trail user will still sense a great deal of self-reliance and a feeling of being away from civilization.

Experience Level III - Trail segments in this category may pass through areas where other land management activities will be readily observable but not dominant. Users will still experience a feeling of being in expansive, relatively undeveloped country. The user will encounter more people and may experience more control and regulation but will still have a feeling of achievement, adventure, and a release from dominance of man's structures or noise.

This experience level fits those situations where the trail user is not remote from other resource activities and public roads. Campgrounds available along these sections will have facilities for the comfort and convenience of the user. Where road access is available to these camps, vault or chemical toilets and litter containers may be provided. Public access (trail heads) may be available at points along these sections, mostly from forest access roads. Portions of the trail may be crossed by unpaved forest access roads.

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Experience Level IV - Trail segments of this category may pass through areas where management activities and land users are an obvious part of the scene. Little opportunity is present for a feeling of remoteness from man's activities. A managed wildland landscape predominates. The crossing and proximity of roads and other trails may result in considerable visitation resulting in need for more signing for information and regulation. The presence of non-recreation activities may necessitate interpretive signing. This experience level fits well those situations where major highways, adjacent recreation, or urban areas makes access easy by people with a variety of interests and motivations. Large portions of these segments may be within sight and/or sound of civilization.

Experience Level V - Trail segments in this category provide the user with a safe continuous trail link between other experience level segments (page 16). They have as their primary purpose the safety, protection, and convenience of the user. Civilization usually is predominate with the recreation experience pointed to allowing passage of recreationists in a safe, convenient manner. These segments will generally be as short as necessary to allow passage across or under highways and railroads or passage through developed areas. Private property or safety considerations may dominate location alternatives requiring fencing of rights-of-way, use of cattle guards, and even gates. In some situations, constructed barriers to prevent motor vehicle trespass will be present.

Segments to be managed for experience Level V will generally be no longer than necessary to accommodate safe and convenient passage. These segments may also contain major trail heads, parking facilities, and private services close to the trail location.

C. Management Policy: Applicable trail wide.

1. Specially Designated Area (P. 20) - In units of the National Wilderness Preservation System and National or State Parks legislated regulations and the policies and management plans from these will be overriding. Trail management plans should insure ready user access to information concerning special regulations such as: party size, restrictions on pets, prohibitions or restrictions on firearms, setbacks from water, limitations on firewood, etc.

2. Visual Management System - National Forest managers will apply the Visual Management System as outlined in Agriculture Handbook, No. 462. Visual Quality Objectives will be determined as a first step. Following this, they will determine the highest Visual Quality Objective which can be achieved consistent with legislative direction that established the trail and existing land use plans. This achievable Visual Quality Objective will then be

incorporated as management direction. It may in some cases be more or less than the level originally inventoried using the Visual Management System.

3. Trail Shelters - These will not be provided. Although allowed by the Act, trail shelters will not be planned for in this initial management planning.

4. Maps and Public Information - Each administrative unit will have maps available for its section of trail adequate to enable trail users to locate and follow the route. These may be free handout maps prepared for the Pacific Crest National Scenic Trail or high quality Forest Recreation maps available for purchase. Administrators will provide a list of commercial services for maps and guides. Requests for detailed maps for the entire trail will be referred to these services. Information on trail conditions, hazards, and facilities will be provided to these same commercial services as necessary to enable them to provide necessary public information.

Public information should contain necessary generalized traveller cautions, such as: carry sufficient water for needs of the day and plan to camp at known water sources; some streams are dangerous to ford during the spring runoff periods; winter travellers should be equipped to survive blizzard conditions and sub-zero temperatures, etc.

D. General Management Guidelines: Applicable trail wide.

1. Each plan should consider the long distance user and how planned facilities complement those in adjacent sections.

a. Maximum distance between available backpacker camps should be 12-15 miles but 7-8 miles is preferred spacing.

b. Maximum distance between equestrian camps 20-25 miles.

c. Maximum interval for safe drinking water should be 10 miles if a water source is available. (See Section 3.)

2. Provide for short term, short distance, and day uses where there is demand that can be accommodated within the overall objective set for each segment.

3. Minimize user conflicts - consider the following type measures:

a. Separate backpacker and equestrian camp areas where possible. Consider locating equestrian camps further off trail particularly where feed opportunities exist.

b. Where camp area separation cannot be achieved, separate livestock feed or holding area at least 100 feet from the campsite.

c. Where possible, avoid providing overnight facilities along short sections designed to receive heavy day use or heavy use incidental to other trail experiences.

d. Construct and/or close feeder, connecting and loop trails as necessary to meet management objectives.

e. Where appropriate, identify and manage some segments to accommodate organized equestrian groups.

4. Stress pack-in pack-out litter disposal (P-34). Provide receptacles only where absolutely necessary for the long distance user or where necessary for non-trail users (see Section E).

5. Commercial services:

a. Require commercial outfitters and guides to provide their own campsites under permit. Where several operate the same area, require joint operation of one or several camps on a cost/share basis.

b. Integrate commercial lodging and food services into the plan where such are available and appropriate to the experience level.

6. Winter Use - Provide for winter use where practical and feasible. Consider snow removal for vehicle parking and trail signing as necessary to accommodate winter hiking or nordic skiing.

7. National Recreation Trails - Plan National Recreation Trail segments to feed to or loop from the PCNST where opportunity exists.

8. Feeder or Loop Trails - Plan feeder or loop trails to complement the PCNST in meeting the objective for each segment. Consider ties to other agency trails.

9. Camping Regulations - Where necessary to prevent damage to sensitive resources, camping may be confined to designated sites or areas.

10. Marking System (P-47) - The symbol that identifies the Pacific Crest National Scenic Trail and the standards for posting are to be uniform for its entire length and will not vary by experience level objective (FSH 7109.11, 33.2).

11. Informational and Directional Signing (P-47) (FSH 7109.11, 33.3).

Private Land - Where the trail passes through private land on an easement, recreationists should be informed of applicable constraints; e.g., "Entering Private Land - visitors please stay on or within 'x' feet of the trail (and camp only at designated spots) (next camp location 'x' miles), etc."

E. Specific Management Guidelines by Experience Level Segments: Descriptions of the level and type of services and facilities to be provided along trail segments of a stated experience level (p. 29-30).

1. Campgrounds

Experience Level I - Wilderness - overnight areas will generally consist of a camp spot with no facilities provided. Some wildernesses in southern California, because of fire or other management constraints, may require camping at designated spots and use of a provided stove. Travellers should be encouraged to camp away from the trail and away from shoreline areas. Toilets will not be provided except as approved in the Wilderness Management Plan.

Experience Level II - Rustic facilities, such as a stove or fire-ring may be provided. Toilets may be provided and should be provided where administrative road access is available. Campsites may accommodate several parties but generally not over 3 (people at one time capacity of 10-15 is preferable). Camps will not straddle the trail but can be in direct view.

Experience Level III - Facilities may utilize nonrustic materials. Toilets will be provided. Wherever possible campsites should be at least 1/4 mile from the PCNST by feeder trail. This experience level may also utilize camps serviced only by administrative road. Experience Level III camps may also be provided along segments where camping space is needed and road access not available.

Camps Without Public Road Access - Capacity may accommodate several parties but generally not over 5-7 (people at one time capacity of 25-35 maximum).

Public Road Access Camps - These should include parking for trail users, unloading ramp and hitch racks. Parking and horse facilities should be removed from but convenient to the camp. Suitable capacity may accommodate up to 15 parties (75 people at one time). Toilets will generally be pump out vault type with one stool per 25 persons. Campground design should be walk in or otherwise oriented toward trail users to avoid attracting other recreationists.

Experience Level IV - These camps will have public road access and may be readily accessible to paved forest, county or state highways. These are most likely developed as part of other recreation needs and are generally of a higher standard than required by overnight trail users. Where possible, they should be at least 1/4 mile from the PCNST.

2. Trail Heads and Feeder Trails

Experience Level I and II - Since public roads will not encounter the trail, these trail heads will be at the end of feeder trails away from the PCNST. The facilities to be offered will depend upon the numbers and types of users, whether other trails and areas are being served, and the experience level objective of the immediate area.

Experience Level III and IV - Depending on need and feasibility, provide for: parking, water, toilets, litter disposal and facilities for unloading and tying horses at the end of short feeder trails. Corrals can be provided. Safe drinking water from a monitored and protected source should be provided.

3. Water

The ideal maximum interval for safe drinking water should be 10 miles along the entire trail. Where travellers are invited to use water, it must meet the Drinking Water Regulations which include monthly monitoring for biological contamination. Off trail water sources should be signed wherever possible when water is scarce.

Springs and creeks along the trail will not, except in the case of contamination, be posted or signed in any way. Contaminated sources will be signed against human consumption. Other open water sources will not be improved with short pipes or other devices which carry with them the implication of "safe" water.

In general, experience Level I and II areas will not have developed water systems. Users will be encouraged to carry their own or treat water that is available.

Developed systems may be provided on the trail in experience Level III and IV areas. The best system would be enclosed ground water system where chlorination, etc., is not required. This would normally be a vertical or horizontal well.

4. Litter Disposal

Experience Level I and II - Stress pack-in pack-out.

Experience Level III - Provide receptacles at camps and trail heads with road access only if necessary for long distance users or to serve other recreationists. Stress pack-in pack-out at camps with no road access.

Experience Level IV - Provide receptacles at camps and trail heads only if needed for long distance users or to serve other recreationists.

5. Interpretation

Experience Level I and II - These segments will not have on-the-ground interpretation. Interpretative services will be provided through written material available outside the areas. Short side trails to vistas may be signed in nonwilderness situations.

Experience Level III and IV - Those segments passing through areas of intensive management activities should provide interpretive services particularly where activities require explanation (p.16).

Other interpretative efforts should be confined to segments receiving high use from a mix of users. In these situations, interpret scenic, historic, natural or cultural features as desirable.

6. Commercial Public Service

Experience Level III and IV Segments - Facilities accessible to the PCNST by feeder trail can be signed from the PCNST for visitor information and convenience (e.g., Fish Lake Resort). Facilities may include overnight lodging, food and supply services.

Experience Level V Segments - May include such services immediately adjacent to the trail.

IV. Management Plan: Management plans should be developed with input and participation from interested public groups and individuals. Plans should be consistent with legislative direction, meet the objectives given in III A and III B-3 and should be in a format which lends well to public use and understanding. Each should contain a high quality map adequate to show the segments and document the location of facilities. Plans should list all facilities to be provided with a priority schedule for accomplishment.

R. E. WORTHINGTON
Regional Forester

APPENDIX J

RARE II

DATA

DESCRIPTION OF RARE II
FINAL ENVIRONMENTAL STATEMENT ALTERNATIVES

ALTERNATIVE A - No other action than that presently being followed in land and resource management planning would take place, with activities continuing as if RARE II did not exist.

ALTERNATIVE B - All roadless areas are allocated to nonwilderness uses.

ALTERNATIVE C - Emphasis is on high resource outputs, but consideration is given areas rated high in wilderness attributes.

ALTERNATIVE D - Emphasis is given areas with high wilderness attributes, but any of those areas with significant resource production potential are placed in the further planning category.

ALTERNATIVE E - Emphasis is on achieving an established minimum level representation of landform, ecosystem, associated wildlife, and accessibility characteristics in the Wilderness System.

ALTERNATIVE F - Emphasis is on achieving an established moderate-level of the same characteristics as Alternative E in the Wilderness System.

ALTERNATIVE G - Emphasis is on achieving an established high-level of the same characteristics as Alternative E in the Wilderness System.

ALTERNATIVE H - Emphasis is on allocation of roadless areas on the basis of Regional and local needs, as perceived by the Forest Service.

ALTERNATIVE I - Emphasis is on adding areas with the highest wilderness attributes to the Wilderness System, with secondary consideration being given to areas of high resource production potential.

ALTERNATIVE J - All roadless areas are recommended for wilderness.

PROPOSED ACTION - A combination of Alternatives C and I, modified in response to public comment received on the Draft Environmental Statement, existing laws and regulations, identified public needs and professional judgment by Department of Agriculture decision-makers.

RARE II WILDERNESS ATTRIBUTE RATING SYSTEM

Wilderness Attributes	Components Upon Which Ratings Are Based
1. Natural Integrity	Fourteen possible physical developments or human-caused impacts (e.g., roads, railroad rights-of-way, reservoirs, grazing, air pollution, etc.), scaled as to their presence, effect on natural integrity, size of area impacted, potential separability from rest of area, duration of impact if uncorrected, feasibility of correcting.
2. Apparent Naturalness	Uses the same components as natural integrity, but the ratings differ.
3. Outstanding Opportunity for Solitude	Size of area, topographic screening, vegetative screening, distance from perimeter to core, human intrusions, scaled as to their degree of impact on opportunity for solitude.
4. Primitive Recreation Opportunities	Size of area, topographic screening, vegetative screening, distance from perimeter to core, diversity, challenge, absence of facilities, scaled as to their degree of impact on primitive recreation.
5. Supplementary Attributes	
a. Ecological	Presence and abundance of endangered or threatened plants and animals or other special ecological features.
b. Geological	Presence and abundance of special geological features.
c. Scenic	Ratings based upon Visual Management System.
d. Cultural Features	Presence of any cultural-historical features.

WORKSHEET 1: FOR RATING INFLUENCE OF IMPACTS ON THE NATURAL INTEGRITY OF POTENTIAL WILDERNESS RESOURCES AND APPARENT NATURALNESS

Name of Area: LION ROCK Code: 6038 Region: 6 Forest: WEN Acreage: 11,000 Evaluators: DUNNELL, LEWIS, SPOLAR, WILLIAMSON Date: 1/9/78

Col. 1	Col. 2 Presence			Col. 3 Effect of Impact on Natural Process					Col. 4	Col. 5		Col. 6			Col. 7					Col. 8 Overall Influence on Natural Integrity						Col. 9 Overall Influence on Apparent Naturalness						
SPECIFIC IMPACT (or cause of impact)	Absent	Present	Do not know	None	Low	Medium	High	Extreme	Area on Which Integrity is Impacted % of Total	Separability of Impacted Area from Whole Area- Yes	No	Duration of Impact, if Uncorrected (years) 0-5	6-10	>10	Feasibility of Correcting None	A Little	Moderate	High	Very High	None	Very Low	Low	Moderate	High	Very High	Extreme	Is not	Very Low	Low	Moderate	High	Very High	Extreme
IMPACT MEASUREMENT																															
1. Physical Developments																					X						X				
a. Road and Railroad	X																														
b. Utility ROW	X																														
c. Reservoirs	X																														
d. Watershed management	X																														
e. Special Recreation Facilities	X																														
f. Other Fixed site facilities	X																														
g. Fences		X			X				NIL	X				X				X													
h. Trails		X					X		NIL		X			X																	
i. Other	X																														
2. Mineral Developments		X					X		NIL		X			X		X					X						X				
3. Recreation	X	X																													
4. Grazing		X			X				100		X			X			X					X					X				
5. Wildlife Management	X																														
6. Vegetative Manipulation		X				X			2	X				X		X					X						X				
7. Insect or Disease Control	X																														
8. Non-indigenous Plants & Animals		X			X				100		X			X	X							X					X				
9. Fire History			X																												
10. Air Pollution Effects	X																														
11. Water Pollution			X																												
12. Unimproved Roads		X					X		NIL		X			X		X						X						X			
13. Occupancies	X																														
14. Other		X					X		NIL		X			X		X						X						X			
Separability										X																					
OVERALL RATING A. Overall rating for entire area																					7 6 (5) 4 3 2 1							7 6 5 4 (3) 2 1			
OVERALL RATING B. Overall rating for area redefined after some/all of impacted areas are separated (see map).																					7 (6) 5 4 3 2 1							7 (6) 5 4 3 2 1			

WORKSHEET 2: FOR RATING OPPORTUNITIES FOR SOLITUDE AND PRIMITIVE RECREATION

Name of Area: LION ROCK Code: 6038 Region: 6 Forest: WENATCHEE Acreage: 11,000 Evaluators: DUNNELL, LEWIS, SPOLAR, WILLIAMSON Date: 1/9/78

Components of Attribute	Opportunity for Solitude					Opportunity for Primitive Recreation				
Size (acres)	Very Low Potential	Low Potential	Moderate Potential	High Potential		Very Low Potential	Low Potential	Moderate Potential	High Potential	
Topographic Screening	Minimal/ None	Little	**Moderate**	High		Minimal/ None	Little	**Moderate**	High	
Vegetative Screening	Minimal/ None	Little	Moderate	**Dense**		Minimal/ None	Little	Moderate	**Dense**	
Distance From Perimeter to Core	Low	**Moderate**	High	Out-standing		Low	**Moderate**	High	Out-standing	
Permanent, off-site intrusions	Many		**Some**		None					
Diversity of opportunity						**Little Diversity**		Moderate		Very Diverse
Challenge						**Rare**		Few		Many
Absence of Facilities						Highly developed	Moderate develp'mt	Limited develp'mt	**Minimal/ None**	

Overall Rating	Opportunity for Solitude							Opportunity for Primitive Recreation						
	None	Very Low	Low	Moderate	High	Very High	Out-standing	None	Very Low	Low	Moderate	High	Very High	Out-standing
	1	2	3	**4**	5	6	7	1	2	3	**4**	5	6	7

WORKSHEET 3: FOR RATING SUPPLEMENTARY ATTRIBUTES

Area: LION ROCK Code: 6038 Forest: WENATCHEE Evaluators: DUNNELL, LEWIS, SPOLAR, WILLIAMSON Date: 1/9/78

PART I

Attribute	IBM Card Number	Presence: Present	Presence: Absent	Presence: Unknown	Overall Rating for Entire Area 1/: Insignificant (1)	Infrequent (2)	Significant (3)	Outstanding (4)	Unique (5)	Description of location, significance and extent of attribute in area
1. ECOLOGICAL a. Endangered or threatened species of animals or insects			X							
b. Endangered or threatened species of plants				X						
c. Special ecological features			X							
2. Special geological features		X					X			Agate beds
3. Scenic values							X			
4. Cultural features		X								Arrastra on State Historical list

PART II

	Put X in appropriate box: Unique	Outstanding	Significant	Infrequent	Insignificant	Explanation
1. Overall rating for supplementary value	5	4	(3)	2	1	

1/ Explanation of rating scale:

Insignificant = Present throughout the physiographic province
Infrequent = Often found in the province
Significant = Infrequently found in the province
Outstanding = Not found elsewhere in the province
Unique = One of very few known occurrences

WORKSHEET 4 - WILDERNESS ATTRIBUTE RATING SUMMARY SHEET

Area Code: (column): 0638 (1 2 3 4 5)

Forest(s): 17 (6 7 8 9 10 11)

(12)

Name of Area: LION ROCK (13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37)

Attribute Scores:

		Column
Worksheet 1	1. Natural Integrity (1-7)	5 (44)
	2. Apparent Naturalness (1-7)	3 (45)
Work Sheet 2	3. Adjusted Area, Natural Integrity (1-7)	6 (46)
	4. Adjusted Area, Apparent Naturalness (1-7)	6 (47)
	5. Solitude Opportunity (1-7)	4 (48)
	6. Primitive Recreation Opportunity (1-7)	4 (49)
	7. Composite Wilderness Attribute Score (4-28) (Sum of 1, 2, 5, 6)	16 (50 51)
	8. Adjusted Area Composite Wilderness (4-28) Attribute Score (Sum of 3, 4, 5, 6)	20 (52 53)
Worksheet 3	9. Supplementary Wilderness Attribute Overall Score (1-5)	3 (54)
	10. Scenic Value (1-5)	3 (55)

WORKSHEET 1: FOR RATING INFLUENCE OF IMPACTS ON THE NATURAL INTEGRITY OF POTENTIAL WILDERNESS RESOURCES AND APPARENT NATURALNESS

Name of Area: NANEUM Code: 6039 Region: 6 Forest: WEN. Acreage: 8700 Evaluators DUNNELL LEWIS SPOLAR WILLIAMSON Date: 1/9/78

Col. 1	Col. 2			Col. 3					Col. 4	Col. 5		Col. 6			Col. 7					Col. 8						Col. 9						
SPECIFIC IMPACT (or cause of impact)	Presence			Effect of Impact on Natural Process					Area on Which Integrity is Impacted	Separability of Impacted Area from Whole Area-		Duration of Impact, if Uncorrected (years)			Feasibility of Correcting					Overall Influence on Natural Integrity						Overall Influence on Apparent Naturalness						
	Absent	Present	Do not know	None	Low	Medium	High	Extreme	% of Total	Yes	No	0-5	6-10	>10	None	A Little	Moderate	High	Very High	None	Very Low	Low	Moderate	High	Very High	Extreme	Is not	Very Low	Low	Moderate	High	Very High	Extreme
IMPACT MEASUREMENT																															
1. Physical Developments																					X								X		
a. Road and Railroad	X																														
b. Utility ROW	X																														
c. Reservoirs	X																														
d. Watershed management		X			X				NIL		X		X					X													
e. Special Recreation Facilities	X																														
f. Other Fixed site facilities	X																														
g. Fences		X			X				NIL	X				X				X													
h. Trails		X				X					X			X		X															
i. Other	X																														
2. Mineral Developments	X																														
3. Recreation	X																														
4. Grazing		X			X				9		X			X			X				X							X		
5. Wildlife Management	X																														
6. Vegetative Manipulation		X				X			1		X			X				X			X							X		
7. Insect or Disease Control	X																														
8. Non-indigenous Plants & Animals		X			X				10		X			X	X							X				X					
9. Fire History			X																												
10. Air Pollution Effects	X																														
11. Water Pollution	X																														
12. Unimproved Roads		X				X			NIL		X			X		X							X						X	
13. Occupancies	X																														
14. Other																															
Separability											X																				
OVERALL RATING																				7 6 5 (4) 3 2 1							7 (6) 5 4 3 2 1						
A. Overall rating for entire area																				7 6 5 4 3 2 1							7 6 5 4 3 2 1						
B. Overall rating for area redefined after some/all of impacted areas are separated (see map).																															

WORKSHEET 2: FOR RATING OPPORTUNITIES FOR SOLITUDE AND PRIMITIVE RECREATION

Name of Area: NANEUM Code: 6039 Region: 6 Forest: WENATCHEE Acreage: 8700 Evaluators: DUNNELL, LEWIS, SPOLAR, WILLIAMSON Date: 1/9/78

Components of Attribute	Opportunity for Solitude					Opportunity for Primitive Recreation				
Size (acres)	Very Low Potential	Low Potential	Moderate Potential	High Potential		Very Low Potential	Low Potential	Moderate Potential	High Potential	
Topographic Screening	Minimal/ None	Little	Moderate	High		Minimal/ None	Little	Moderate	High	
Vegetative Screening	Minimal/ None	Little	Moderate	Dense		Minimal/ None	Little	Moderate	Dense	
Distance From Perimeter to Core	Low	Moderate	High	Out-standing		Low	Moderate	High	Out-standing	
Permanent, off-site intrusions	Many		Some		None					
Diversity of opportunity						Little Diversity		Moderate		Very Diverse
Challenge						Rare		Few		Many
Absence of Facilities						Highly developed	Moderate develp'mt	Limited develp'mt	Minimal/ None	

Overall Rating	Opportunity for Solitude							Opportunity for Primitive Recreation						
	None	Very Low	Low	Moderate	High	Very High	Out-standing	None	Very Low	Low	Moderate	High	Very High	Out-standing
	1	2	3	4	5	6	7	1	2	3	4	5	6	7

WORKSHEET 3: FOR RATING SUPPLEMENTARY ATTRIBUTES

Area: NANEUM Code: 6039 Forest: WENATCHEE Evaluators: DUNNELL, LEWIS, SPOLAR, WILLIAMSON Date: 1/9/78

PART I

	Attribute	IBM Card Number	Presence: Present	Presence: Absent	Presence: Unknown	Overall Rating for Entire Area 1/: Insignificant (1)	Infrequent (2)	Significant (3)	Outstanding (4)	Unique (5)	Description of location, significance and extent of attribute in area
ECOLOGICAL	a. Endangered or threatened species of animals or insects			X							
	b. Endangered or threatened species of plants				X						
	c. Special ecological features		X					X			LAKE BEDS THAT HAVE GONE TO WET MEADOWS
2. Special geological features				X							
3. Scenic values			X	X	X		X				
4. Cultural features											

PART II

	Put X in appropriate box: Unique	Outstanding	Significant	Infrequent	Insignificant	Explanation
1. Overall rating for supplementary value	5	4	3	(2)	1	

1/ Explanation of rating scale:

Insignificant = Present throughout the physiographic province
Infrequent = Often found in the province
Significant = Infrequently found in the province
Outstanding = Not found elsewhere in the province
Unique = One of very few known occurrences

WORKSHEET 4 - WILDERNESS ATTRIBUTE RATING SUMMARY SHEET

Area Code: 0 6 0 3 9 (columns 1 2 3 4 5)

Forest(s): 1 7 (columns 6 7 8 9 10 11)

Name of Area: N A N E U M (columns 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32)

(column 12)

(columns 33 34 35 36 37)

Attribute Scores:

		Column
Worksheet 1	1. Natural Integrity (1-7)	4 (44)
	2. Apparent Naturalness (1-7)	6 (45)
Work Sheet 2	3. Adjusted Area, Natural Integrity (1-7)	4 (46)
	4. Adjusted Area, Apparent Naturalness (1-7)	6 (47)
	5. Solitude Opportunity (1-7)	4 (48)
	6. Primitive Recreation Opportunity (1-7)	3 (49)
	7. Composite Wilderness Attribute Score (4-28) (Sum of 1, 2, 5, 6)	17 (50 51)
	8. Adjusted Area Composite Wilderness (4-28) Attribute Score (Sum of 3, 4, 5, 6)	17 (52 53)
Worksheet 3	9. Supplementary Wilderness Attribute Overall Score (1-5)	2 (54)
	10. Scenic Value (1-5)	2 (55)

APPENDIX K

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